

## **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.



25 DII  
R23

CAT/57

# Tongass Marine Highway

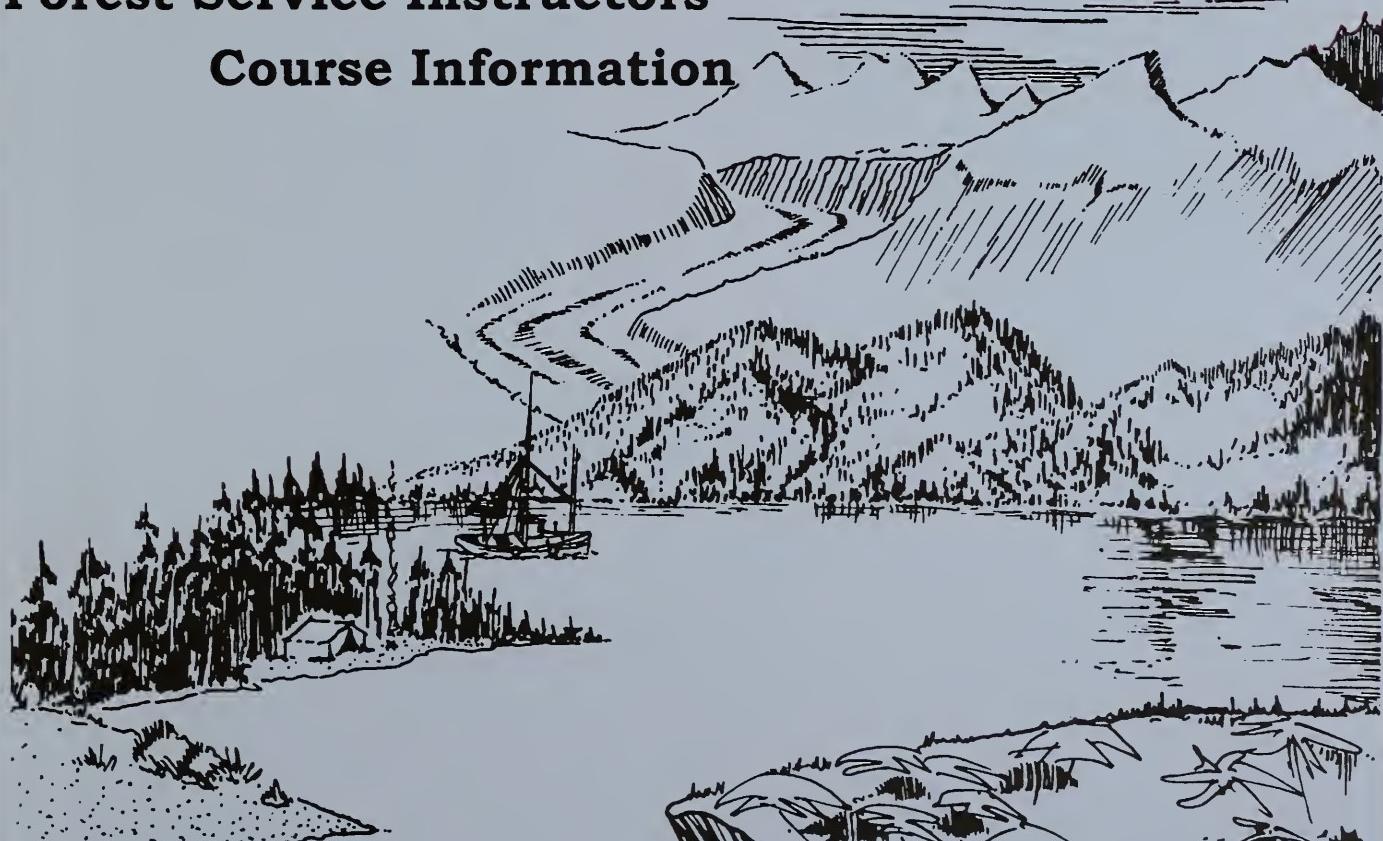


## Elderhostel Program

A = 53

GPO  
Depository  
Library  
Program

### Forest Service Instructors' Course Information



United States  
Department of  
Agriculture

Tongass National Forest  
R10-MB-341  
January 1997

PREPARED BY  
Forest Service  
Alaska Region





United States  
Department of  
Agriculture

Forest  
Service

Alaska Region  
Tongass National Forest

Chatham Area  
204 Saginaka Way  
Sitka, Alaska 99835  
(907) 747-6671

---

Reply to: 2390

Date: October 1, 1996

## Welcome to the Tongass National Forest!

As a participant of the 1996-97 Elderhostel, you and your peers have the unique opportunity to see Southeast Alaska as few others do: in the winter. You will travel this week, as most Southeast Alaskans, aboard the Alaska Marine Highway. You will visit our communities, talk with residents, and learn about the richness of this Region. In short, you will experience firsthand the many special aspects of living within the Tongass, the Nation's largest National Forest.

We are pleased that you have chosen an Elderhostel adventure aboard the Alaska Marine Highway. The Forest Service interpreter on board is a valuable resource. This week, the interpreter will provide you with an introduction to Alaska, the Inside Passage, and the Tongass National Forest. Understanding the complexity of managing such a vast resource will give you insight into forest management.

If you have comments or suggestions on how we can improve our services, please write to us at the above address. Please let us know if we can be of any future assistance. Enjoy your Alaska Adventure!

Sincerely,

  
GARY A. MORRISON  
Forest Supervisor

960826 0830 ANM 2390 PT

# *How Big Is ALASKA?*



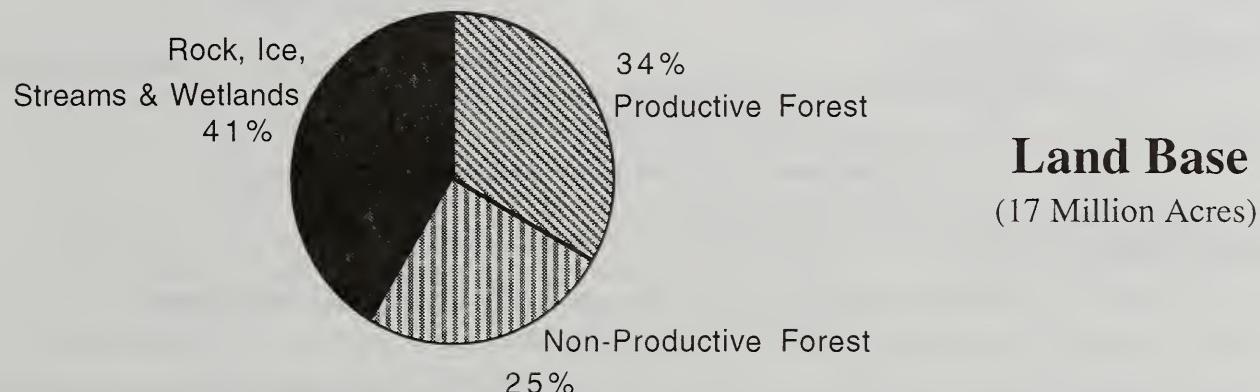
Alaska is 586,412 square miles in area  
(with 33,904 miles of shoreline --  
that's 33% of America's total shoreline!)

## *Alaska is the size of:*

|                  |                    |                    |
|------------------|--------------------|--------------------|
| 11 Alabamas      | 17 Maines          | 8 Oklahomas        |
| 5 Arizonas       | 54 Marylands       | 6 Oregons          |
| 11 Arkansas'     | 69 Massachusetts'  | 13 Pennsylvanias   |
| 3 Californias    | 10 Michigans       | 470 Rhode Islands  |
| 6 Colorados      | 7 Minnesotas       | 18 South Carolinas |
| 114 Connecticuts | 12 Mississippis    | 7 South Dakotas    |
| 277 Delawares    | 8 Missouris        | 14 Tennessees      |
| 10 Floridas      | 4 Montanas         | 2 Texas'           |
| 10 Georgias      | 7 Nebraskas        | 7 Utahs            |
| 88 Hawaiis       | 5 Nevadas          | 59 Vermonts        |
| 7 Idahos         | 61 New Hampshires  | 14 Virginias       |
| 10 Illinois'     | 73 New Jerseys     | 8 Washingtons      |
| 16 Indianas      | 5 New Mexicos      | 24 West Virginias  |
| 10 Iowas         | 12 New Yorks       | 10 Wisconsins      |
| 7 Kansas'        | 11 North Carolinas | 6 Wyomings         |
| 14 Kentuckys     | 8 North Dakotas    |                    |
| 12 Louisianas    | 14 Ohios           |                    |

# The Tongass National Forest

The Tongass National Forest is part of the magnificent temperate rain forest that stretches along the northern Pacific Ocean. This biome extends from coastal northern California to Prince William Sound in Alaska. Within the Tongass National Forest giant Sitka Spruce and Western Hemlock trees dominate this moss-draped forest. Shallow soils provide little support when strong winds knock these giants down like toothpicks. New canopy openings regenerate rapidly and thoroughly maintaining dynamic forest processes. The lush-green understory plants range from two-inch forbs to the prickly eight-foot devils club. Recent glacial retreat laid down nature's own cement, glacial flour, which leads to the development of extensive wetlands found throughout the forest. Only hardy plant species can survive the highly acidic muskeg environments. Slight elevation gains from the seashore to the mountain peaks reveal the mosaic of landscapes creating the unsurpassed beauty of the Tongass National Forest.

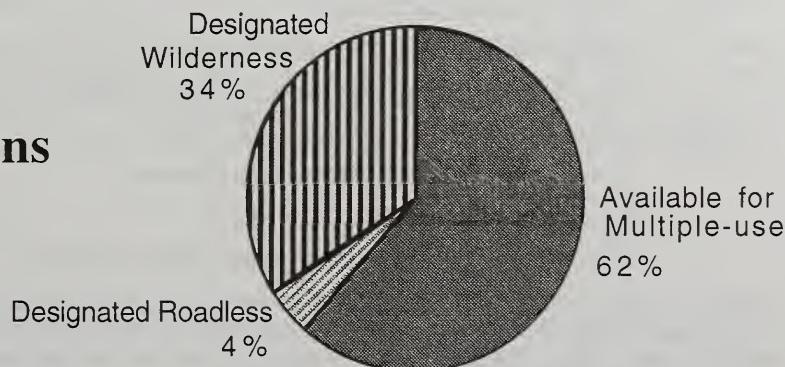


## Management of the Tongass National Forest

As with all national forests, the Tongass National Forest is managed under a multiple-use, sustained yield mandate. This means that outdoor recreation, range, timber, watershed and wildlife/fish habitats have equal emphasis in the land management plan for each forest. The Forest Service and the public work in partnership to resolve issues created by competition among user-groups. The Tongass Land Management Plan is in the revision process. The revised plan will reflect the changes in inventories, new science and the public view the Tongass National Forest.

## Land Use Designations

(17 Million Acres)



*At 17 million acres, the Tongass is the nation's largest national forest. It encompasses nearly 90% of the land available in Southeast Alaska. As a result, every resident's lifestyle is affected in some fashion by the management of the Tongass National Forest. Most S.E. Alaska residents live near a forest boundary, and many individuals make their livelihood within the forest. The beauty and bounty of the Tongass National Forest ties the people to the land.*

## Legislative acts affecting management of the Tongass National Forest

- 1902, Alexander Archipelago Reserve
- 1907, Tongass National Forest
  - 1908, Forests merged
- 1930's Tongass manages Civilian Conservation Corp, CCC, projects
- 1947, Congress authorized four 50-year timber contracts
  - Ketchikan Pulp Company, 1951
  - Alaska Wood Products, 1954
  - Alaska Pulp Company, 1953
  - U.S. Champion, 1968
- 1959, Alaska Statehood
  - 400,000 acres selected from the national forest of Alaska
- 1960, Multiple-use Sustained Yield Act, (MUSYA)
  - Multiple resource management of: outdoor recreation, range, timber watershed and wildlife/fish habitat
- 1964, Wilderness Act
  - Specific guidelines for managing Congressionally designated wilderness
- 1969, National Environmental Policy Act, (NEPA)
  - Requires impact studies for any alterations to federally managed lands
- 1971, Alaska Native Claims Settlement Act, (ANSCA)
  - 550,000 acres selected from the Tongass
  - Authorized withdrawal of up to 80 million acres as potential wilderness
- 1976, National Forest Management Act, (NFMA)
  - Established land use designations, (LUD)
  - Plans revised every 10-15 years
  - Set decadal timber limit of ASQ (available sale quantity)
  - Reaffirmed multiple-use sustained yield mandate
- 1978, National monuments designated
  - Misty Fiords National Monument; 2,294,343 acres
  - Admiralty National Monument; 937,456 acres
- 1980, Alaska National Interest Land Conservation Act, (ANILCA)
  - Designated 5.3 million acres wilderness in the Tongass NF
  - Decade timber supply of 4.5 Billion Board Feet (BBF)
- 1990, Tongass Timber Reform, (TTRA)
  - Designated 300,000 acres wilderness
  - Repealed 4.5 BBF timber supply
    - 100 foot stream buffers
  - 727,000 acres designated primarily roadless (LUD II)

•This publication was adapted from a United States Forest Service information publication "The Alaska Region, the Forest Service in Alaska Overview," 1996 ; "Tongass Land Management Plan Revision Briefing Paper," 1993; Rakestraw, Lawrence (1981) *A History of the United States Forest Service in Alaska*.

# Common Plants of the Tongass National Forest

Southeast Alaska is a land of glaciers, mountains, waterways and thousands of islands. It is an area which averages more than 100 inches of rain and snow each year, and this moisture is largely responsible for Southeast's lush temperate rainforest vegetation.

Some of the common trees are:

## • Sitka Spruce (*Picea sitchensis*)

Sitka spruce, Alaska's state tree, is easily identified by its stiff, sharp-tipped needles that encircle the branch. Its cones are two to four inches long and hang down from the branch tips. On older trees, the bark is scaly, often with a purplish cast. This fast-growing tree makes up 20 to 30% of the coastal forest and is harvested for its value as lumber. Its strength and light weight make it an ideal wood for airplane and boat construction. It is also used to make guitars and piano sounding boards because of its excellent acoustical properties.



## • Western Hemlock (*Tsuga heterophylla*)

Western hemlock trees cover about 60 to 75% of the forest in Southeast Alaska. The tree is identified by its soft, round-tipped needles that grow in two flat rows from the branch. Its cones are about one inch long and hang down from the branch tips. The top of the tree always droops, making the tree easily identifiable from a distance. Hemlock is used for some construction lumber and to produce high quality paper pulps. Its pulp is also used in manufacturing some rayons, cellophanes and plastics.

Characteristic shapes of Sitka spruce (left) and western hemlock (right).

## • Western Redcedar (*Thuja plicata*) and Yellow-cedar (*Chamaecyparis nootkatensis*)

There are two species of cedar in Southeast Alaska, the western redcedar and the yellow-cedar (known also as Alaska cedar or Alaska cypress). Cedars are easily recognized by their scalelike, flattened needles and are very aromatic. Although the yellow-cedar grows throughout the coastal forest of Southeast Alaska, the western redcedar is found predominantly south of Petersburg. Western redcedar, very resistant against rot and insect infestation, is widely used for shingles, fence posts and boats. The Tlingit and Haida Indians use redcedar wood for their totem poles and its stringy bark for mats and baskets. Yellow-cedar, durable yet soft, is ideal wood for carving. The Tlingit and Haida Indians use this wood for carved canoe paddles. It was also used for totem poles in the north where red cedar does not grow, although it was obtainable by trade. Commercially, this wood is used for window frames, doors and boats.

## • Lodgepole Pine (*Pinus contorta*)

Shore pine, a variety of lodgepole pine, is found in muskegs throughout Southeast Alaska. Muskegs are peatlands, areas where drainage is restricted and layers of peat moss accumulate. These wetlands support a diverse, yet specialized, group of plants and animals. In Southeast Alaska, shore pines are not harvested for commercial purposes, but they contribute to habitat important to the survival of many animals.

## • Red Alder (*Alnus rubra*)

Red Alder trees are the most abundant deciduous trees found here and are easily recognized by their smooth, gray bark. They are common along streams, beaches and in areas where the soil has been disturbed, such as along roads, logging sites, landslides or glaciers. The wood is used for firewood and for smoking meat or fish. It is not normally used for lumber but is used sometimes for carving.

---

*Common plants of the forest understory include berries, devil's club, skunk cabbage and a variety of wildflowers.*

• **Berry Bushes**

Berries are plentiful throughout Southeast Alaska and can be gathered from late June through October. Although blueberries and salmonberries are the most common, huckleberries, thimbleberries and high bush cranberries are also popular. Southeast Alaska also has poisonous berries which should be avoided, such as the baneberry, which has large, divided leaves and round red or white fruit.

• **Devil's Club**

The shrub devil's club is aptly named for the spines which cover its stems and the undersides of its leaves. It's an abundant forest plant found along streams and talus slopes where it often forms a seemingly impenetrable barrier. When someone brushes against the plant, the sharp spines break off and penetrate the skin. These wounds may fester or cause allergic reactions. The large devil's club, sometimes ten feet tall, has large maple-like leaves which are often a foot wide. Although the undersides of the leaves carry the spines, the tops of the leaves appear soft and smooth. In spring the young, tender shoots of the devil's club can be cooked and eaten as a vegetable. They are also eaten by Sitka black-tailed deer and banana slugs. Although the bright, red berries are considered inedible by humans, they are eaten in the fall by brown bears, hermit thrushes and red squirrels with apparently no ill effects. Devil's Club is a very important plant in traditional Tlingit medicine. It is used as a headache remedy, a laxative, and has even been reported as a cancer cure.

• **Skunk Cabbage**

Skunk cabbage grows in the wet areas of the forest understory. It is one of the first plants to emerge in late February or early March, often while there is still snow on the ground. Its bright yellow spathe, or flower bract, breaks through the soil and forms an erect enclosure for a thick green floral spike. Later this spike forms hundreds of tiny flowers. When the flowers appear, the plant begins to produce huge leaves which reach up to four or five feet long. These leaves contain large amounts of oxalic acid and should not be eaten by people. Southeast Alaska natives destroyed the oxalic acid in the plant by roasting the roots and then grinding them into a flour. They also used the leaves to wrap salmon before baking and to line berry baskets and cooking pits. This use resulted in skunk cabbage being called by the nickname, "Indian wax paper." Skunk cabbage also provides food for an abundance of wildlife. Bears dig up and eat the thick underground parts; Canada geese eat the mature plant; Sitka black-tailed deer eat the plant in the early spring, late summer and fall; and Steller's jays eat the seeds which fall to the ground during the late summer.



• **Wildflowers**

Some of the many wildflowers you might see while visiting Southeast Alaska in the summer include: lupine, fireweed, bunchberry, violets (both the yellow stream violet and the blue Alaska violet), buttercup, red-orange columbine, wild rose, blue iris, forget-me-not (Alaska's state flower), and a variety of orchids.

---

*Bibliography*

Eppenbach, Sarah, *Alaska's Southeast: Touring the Inside Passage*, The Globe Pequot Press, Chester, Connecticut, 1991.

O'Clair, Rita, Robert Armstrong, and Richard Carstensen, *The Nature of Southeast Alaska*, Alaska Northwest Books, Anchorage, 1992.

U.S. Forest Service, information publications.

*The content information in this publication was reviewed by Sue Trull, Ecologist, Chatham Area, U.S. Forest Service.*

# *Glaciers*

*The sparkling rivers of blue ice called glaciers are a feature for which Alaska is well known. In fact, Alaska has more square miles of glaciers than the rest of the inhabited world. Glaciers cover over 3% of the state, or about 20,000 square miles. This is greater than the area of Switzerland (15,941 square miles). Glaciers add much to the beauty and fascination of Alaska's Pacific coastal regions.*

## **Some interesting facts about Alaska's glaciers are:**

- About 20,000 years ago, almost all of Southeast Alaska was covered by ice. Today, the 2,600-mile Pacific coastline from Dixon Entrance to Cook Inlet is known as Alaska's glacier belt.
- During the Pleistocene, or "The Great Ice Age," there was a continental ice sheet over much of North America. One of the main passages through which the glaciers flowed was over White Pass and Chilkoot Pass and into Chatham Strait.
- Since the end of the Pleistocene about 10,000 to 15,000 years ago, there have been two periods of glaciation in Southeast Alaska. The Mendenall Stage began 3,500 years ago and lasted until 1,000 years ago. During this time, the glaciers in Glacier Bay doubled in length. A more recent ice age was called the Alaska Little Ice Age, and it began 350 years ago and ended in the late 1800s.
- Strange as it may seem, glaciers are not associated with extremely cold climatic conditions. Practically all of Alaska's glaciers are located south of the Arctic Circle.
- Interior and Northern Alaska, which are much drier and, in winter, colder than the coastal area, are practically free from glaciers. The exception is the Alaska Range, which includes Mt. McKinley, and to a minor extent, the Brooks Range.
- One estimate is that Alaska has 270 glaciers that have been named and explored and probably as many more that are unnamed. Other estimates put these figures much higher. Alaska and British Columbia together have over 80% of all the glaciers located in the temperate zones.
- Some of Alaska's glaciers are growing while others are receding. Generally it is thought that Alaska's glaciers are gradually on the decrease; however, one report says that Alaska presently has as much ice now as it did during the Ice Age.

---

## *General Information about Glaciers*

- Glaciers are a moving history book. They continually collect pollen, volcanic ash and rocks. While the front of the glacier may contain 100-year-old material, the icefield may just be forming. In a glacier, the old ice melts or "calves" off, while new ice is always being formed.
  - Seventy-five percent of the earth's fresh water is locked in glacial ice. Glacial ice is nine times as dense as the snow which falls and later forms a glacier. *The change is like taking a piece of angel food cake (snow) and squashing it flat to make a thin, dense layer of cake (glacial ice).*
  - One year of compacted snowflakes yields "firn," an intermediate stage in the transformation of snow to glacial ice. After many more years of refreezing and recrystallization, the density is increased to result in glacial ice.
  - Glaciers form where continuous, warm, moisture-laden winds and clouds exist at elevations high enough to result in precipitation in the form of snow and where summer is too short and cool to melt the previous winter's snowfall. These great masses of snow, under pressure, turn gradually to ice, fill the valleys between the mountains, and flow downhill as do the rivers, only more slowly.
  - Glaciers flow fastest where they are thickest, along the center of the glacier. For flow to occur, ice must be at least 100 feet thick. A daily flow or travel rate of one to two inches is common; one to two feet is comparatively fast; and 20 to 30 feet a day is rare and extremely rapid. The fastest moving glacier in the world is in Greenland and moves on the average of 60 feet a day.
  - The average temperature of a glacier may be obtained by digging a hole 30 feet deep and measuring the temperature of the ice.
  - Glacial ice is impermeable to air and water. It takes nine times as many calories of energy to evaporate ice than to melt it. Therefore, most of the loss of ice from a glacier is in the form of meltwater.
  - The main cause of melting in glaciers is the wind, not the sun. The wind moves warm air down to the surface of the glacier. This air is then cooled by the glacier, and the energy used to cool the air near the glacier causes the ice to melt. Sunlight is not a major source of melting because it is reflected from the glacier, keeping the heat from absorbing into the ice.
  - It is also believed that glacial ice can't exist in vertical sheets in excess of 2,000 to 3,000 feet because the pressure generates heat which melts the ice. This may account for the rivers that flow out beneath many glaciers.
  - Crevasses are usually about 100 feet deep and are formed as the ice moves over rocky, uneven surfaces below the glacier.
-

---

## *Types of Glaciers*

*There are various ways to classify glaciers. Types of glaciers can overlap, and a glacier can change its characteristics by becoming active or stationary or by receding. Here glaciers are divided into four types, and some distinguishing characteristics are given for each type. The four types listed are the continental icecaps, the tidewater glaciers, the inland glaciers (known as piedmont glaciers when they are very large), and the alpine glaciers.*

### Continental Icecaps

There are only two of these in the world at present: the Greenland Icecap and the South Polar Icecap.

### Tidewater Glaciers

Tidewater glaciers are those that reach the sea. They are generally quite active, with much movement, and discharge icebergs into the sea. There are only 30 of these left in the world today.

- Columbia Glacier in Prince William Sound is the best known of Alaska's tidewater glaciers. It is the largest in the world which ocean-going vessels approach. Columbia's sparkling wall of blue ice moves on the average of six feet a day, which is considered very rapid. It has a spectacular front that is 150 feet to 250 feet high and three to four miles wide. It is about 25 miles long.

- LeConte Glacier near Petersburg is the most southern of the tidewater glaciers in North America. Icebergs from this glacier are seen frequently in the channels near Petersburg.

- Sawyer, South Sawyer and Dawes Glaciers are located in Tracy and Endicott Arms, about 30 miles south of Juneau. These are popular tour destinations. Often icebergs are seen in Stephens Passage between Juneau and Petersburg.

- Glacier Bay National Park and Preserve contains several tidewater glaciers of which the Muir Glacier is probably the most famous. With its sheer face rising 365 feet into the air, it moves 20 to 30 feet a day and produces a great number of icebergs.

### Inland and Piedmont Glaciers

These glaciers fan out and terminate in a glacial "moraine," or an area where glacial material has been deposited and left by the glacier. Sometimes these glacial moraines exist only a short distance from the sea. Many were evidently tidewater glaciers at one time. Sometimes a lake is formed at the base when the moraine built by the glacier serves as a dam in the valley. There are slightly more than 100 of these glaciers in the world today. Piedmont glaciers, which are the largest of inland glaciers and are relatively rare, are generally formed by the merging of several glacial streams.

---

*Several inland glaciers are reached easily by car. You will find visitor centers, staffed by U.S. Forest Service personnel, at both the Mendenhall Glacier and the Portage Glacier.*

- **Mendenhall Glacier**, a short driving distance from Juneau, is a beautiful inland glacier. It is receding at the rate of 70 feet a year. Its beautiful lake at the base is used for ice skating in the winter, and ice is harvested from the floating icebergs for freezing fish. (Glacial ice does not melt as rapidly as artificial ice because the air has been pressed out of it.)
- **Matanuska Glacier** can be seen from the Glenn Highway about 100 miles east of Anchorage.
- **Worthington Glacier** is near Valdez, and **Exit Glacier** is outside of Seward. **Portage Glacier** and **Child Glacier** can be reached by car from either Anchorage or Seward.
- **Black Rapids Glacier**, facing the Richardson Highway, is known as the "Galloping Glacier." Sometimes inland glaciers come to life and move rapidly. Black Rapids Glacier became active some years ago and moved forward three miles in less than five months. This was an average of 115 feet a day. It has since slowed down, but it is still known as the "Galloping Glacier."

- **Malaspina Glacier**, Alaska's largest glacier, is an excellent example of a piedmont glacier. Named for an Italian navigator who explored this region in 1791, it is larger than Rhode Island. Six large ice streams merge to form this immense ice plateau. The Malaspina Glacier has a 25-square mile forest with trees up to three feet in diameter growing on its back.

## Alpine Glaciers

Throughout the world, there are literally thousands of these lone glaciers, which have been severed in the past from the main icebody and now hang in high canyons on the mountains.

- These are the most common types of glaciers.
- Alaska has numerous small glaciers of this type, most of which have not been named.
- The glacial systems of the mountain peaks in the 48 contiguous states are composed of glaciers of this type.
- Alpine glaciers sometimes travel down through valleys, often coming below the timberline. These glaciers usually carry rock debris on their surface as well as in their basal parts.
- Hanging glaciers are generally located in a pocket high on the mountainside and lack the weight and increasing accumulation of ice and snow to cause them to move actively down the mountain slope.

# The Bald Eagle in Southeast Alaska

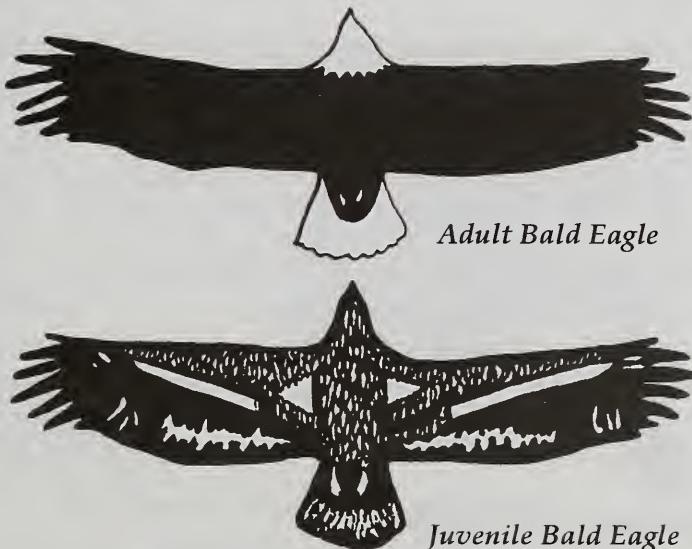
Found only in North America, bald eagles are more abundant in Alaska than anywhere else in the United States. They occur predominantly along Alaska's coast, offshore islands, and interior lakes and rivers. Of the 40,000 adult bald eagles estimated to inhabit Alaska, 13,000 are found in Southeast Alaska.

Southeast Alaska is characterized by a mountainous mainland coast and innumerable islands with approximately 12,000 miles of forested shoreline. The 17 million acre Tongass National Forest makes up about 80% of Southeast Alaska and provides excellent eagle habitat.

## •Food Habits

In Southeast Alaska, bald eagles feed mainly on fish, especially salmon and herring. In winter or when fish and carrion are scarce, eagles will prey on birds and small mammals as well as forage on the beaches for shellfish. Most adult eagles remain year-round in Southeast Alaska, but many will wander widely throughout the region in the fall and winter in search of food.

Eagles frequently can be seen swooping down to catch fish near the surface of the water. Eagles also use their talons to pull dying or dead salmon out of the rivers during spawning runs.



## •Nesting Sites

In Southeast Alaska, bald eagles usually nest in old growth timber along salt water shorelines and mainland rivers. Most often, they select old growth Sitka spruce (78%) for their nesting sites, but they also use hemlock (20%), cedar (2%) and cottonwood (0.1%). The old growth trees which are commonly used for nesting sites are often 400 years old and are the largest of the stand (averaging 3.6 feet in diameter). Occasionally, eagles build nests in snags (dead trees).

The highest nesting densities of bald eagles occur on the islands of Southeast Alaska. On the average, there is one eagle nest for every 1 1/4 mile of shoreline, and Admiralty Island supports the greatest density of nesting bald eagles with at least one nest located every mile (901 nests built along 860 miles of shoreline!).

## What To Look For! ADULT BALD EAGLES

- Length: about 3 feet from head to tail tip
- Weight: 10 to 14 pounds (*Like most birds of prey, females are larger than males.*)
- Wingspan: reaches 7 1/2 feet (*The bald eagle is Alaska's largest year-round resident bird of prey!*)
- Easily recognized by dark body and white head and tail. *Bald eagles attain white head at about 4 or 5 years of age.*
- Head is relatively large and, in flight, extends forward of the wings more than half the length of the tail.
- Very vocal, particularly when they're around other eagles.
- Fly with slow, powerful wing beats.
- Soar with their wings usually flat.
- Average 30 to 40 miles per hour in normal flight, but can reach speeds up to 100 miles per hour while diving.
- Exhibit spectacular courtship activity in spring when pairs lock talons while in flight and cartwheel downward.

## YOUNG EAGLES

- Reach their maximum body size in the first year.
- Have brown eyes which lighten to become yellow when they reach sexual maturity at about 5 years of age.
- Are dark with white mottling on body, wing and tail feathers.
- Even with varying degrees of white in feathers, can be identified in flight by pattern of a white diagonal line and white spot on the underwing.

## •Nesting Activity

Nesting activity begins in early April. Although a pair of eagles can build a new nest in about four days, it is most common for bald eagles to use old nests and add new sticks each year. Because of this, nests increase in size each year, and a nest that has been used for several years may be 5 to 7 feet across and 3 to 5 feet deep. During the 6-month breeding period, nesting eagles remain close to their nesting site.

Bald eagles usually lay two eggs which hatch in late May or early June. The young are helpless for the first few months of life and are not ready to leave the nest until August. Adult pairs are believed to mate for life.

## •The Eagle Is A Protected Species!

In Alaska, the bald eagle is protected federally by the Bald Eagle Protection Act and the Migratory Bird Treaty Act. It is, therefore, illegal to kill or possess an eagle, alive or dead, or to possess any part of an eagle, including feathers. (*In the Lower 48 states, the bald eagle is an endangered species and, therefore, is also protected by the Endangered Species Act.*)

At one time, bald eagles did not receive the protection in Alaska that they receive today. In 1917 the Alaska Territorial Legislature imposed a bounty system on eagles because it was believed that eagles preyed excessively on salmon and foxes, subsequently damaging those industries. This belief was later found to be false, but over 100,000 eagles were killed before the bounty was removed in 1953.

## •Management Today

Today bald eagle populations in Alaska are healthy. Continued success of these populations depends on quality of habitat and degree of human disturbance. The loss of nesting sites, deterioration of salmon spawning streams and increasing human disturbance could pose potential problems for Alaska's bald eagles.

Pesticides, which had a major effect on bald eagle populations in the Lower 48 states, apparently have not damaged Alaska's populations; however, some contaminants have been recorded in Alaskan fish populations and subsequently in bald eagles. Since the use of DDT was banned in 1972, populations of bald eagles in the lower 48 states are beginning to increase.

### The Bald Eagle is the Nation's Symbol

The scientific name for the bald eagle is descriptive of the eagle's association with water and of its most distinguishing characteristic. *Haliaeetus leucocephalus* is the Greek wording for "sea eagle with white head." The bald eagle was named when "bald" (from the Welsh origin "balde") also meant white, white-faced, or white wig, as in elder statesmen of the 1700s.

*In 1782, the Continental Congress of the United States adopted the native bald eagle as the nation's symbol.*

## Where To Look For Eagles!



- Watch for eagles all along the ferry route. During the winter, you are most likely to see them perched in trees or on the tidal flats feeding on fish or carrion. In the spring, watch for courtship activity and nest building. Later in the summer, you can watch for young eagles learning to fly and leaving the nest. Always watch for eagles fishing or feeding along the shoreline.
- Be sure to look for eagles when the ferry passes through Sergius Narrows and Whitestone Narrows. This is considered to be one of the best places to view eagles in Southeast Alaska.
- Throughout Southeast Alaska, eagles congregate wherever there are large numbers of spawning fish.

*One of the most dramatic concentrations of eagles can be seen in the fall on the Chilkat River near Haines where 100,000 to 500,000 chum salmon come to spawn each year. Here over 3500 eagles may gather in October and November to feed on the salmon. In 1972 the Alaska State Legislature recognized this area as critical bald eagle habitat to ensure protection of the large numbers of eagles found there in the winter. In 1982 this area was established as the Alaska Chilkat Bald Eagle Preserve.*

*Another river where eagles feed on spawning fish is the Stikine River near Wrangell. In April, there can be up to 1500 eagles along the river feeding on a type of smelt called eulachon ("hoo-li-gan").*

# Land Mammals of Southeast Alaska

There are 49 terrestrial mammals found in Southeast Alaska, and 11 of these are considered rare or are found in limited areas. The distribution of all of Southeast Alaska's land mammals is determined in large part by the geographic and climatic features of the country, including the heavy rains, deep snows, rivers, forests, and ice-covered coasts. An excellent book for further reference is *The Nature of Southeast Alaska* by Rita O'Clair, Robert Armstrong and Richard Carstensen.

Some of the land mammals of Southeast Alaska are:

- Black Bear
- Brown Bear
- Moose
- Sitka Black-tailed Deer
- Mountain goat
- Wolf
- Coyote
- Red Fox
- Lynx
- River Otter
- Weasels (two species)
- Marten
- Mink
- Wolverine
- Beaver
- Porcupine
- Red Squirrel
- Red-backed vole



## • *Sitka Black-tailed Deer*

Sitka black-tailed deer inhabit the old-growth forests, subalpine, and alpine meadows of Southeast Alaska. Historically, their populations have fluctuated throughout the Southeast. They are currently found in varying numbers from Dixon Entrance to Yakutat Bay on the mainland and the islands of the Alexander Archipelago, south of Lynn Canal and Icy Straits. The deer are native to the mainland and the islands of the Alexander Archipelago and were transplanted to Yakutat in 1934 and to upper Lynn Canal in 1951 and 1952. Southeast Alaska is the northernmost portion of the natural range of the Sitka black-tailed deer.

Sitka black-tailed deer migrate from beach to alpine areas depending on snow depth and food availability. The deer feed primarily on low-growing plants, such as young leaves, sprouts and herbs. When the winter snows cover the green plants, however, the deer depend on browse (feeding extensively on tips of cedar and eating spruce and hemlock occasionally). When snow depths under timber reach 18 to 24 inches, the deer congregate on open beaches, where they eat dead beach grass and kelp. This is the most difficult time for the deer, and many of them do not survive. Wolf predation may also be an important limiting factor, especially during hard winters.

## • *Moose*

Moose were relatively scarce in Southeast Alaska until the moose population in Canada expanded and animals migrated through corridors like the Alsek, Chilkat, Taku and Stikine River valleys. By the 1950s, moose could be found in all major Southeast river drainages. Presently, populations of moose inhabit the Malaspina and Yakutat forelands, river valleys between Haines and the Canadian border, Berners Bay, and the Taku River and Stikine River valleys.

Southeast Alaska's moose population is supported primarily by shrub willows that grow in low-lying areas and along rivers. Moose can be found browsing on vegetation from sea level to 2,000 feet in the summer and up to 3,500 feet or higher during the rutting season in the fall. During the winter, snow forces the moose to return to the lower elevations. Between mid-May and mid-June, cow moose move to dense spruce forests on lowland river valleys to give birth to calves. Moose are preyed upon by black bears, brown bears and wolves.

## • *Mountain Goat*

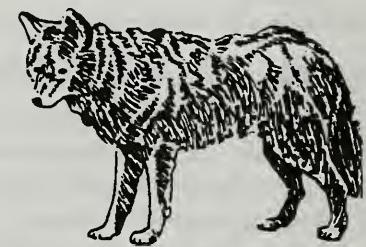
Mountain goats prefer the rugged and inaccessible areas of the coastal mountains. Cushioned pads on their hooves allow them to climb easily up and down sheer rocky cliffs. Mountain goats are found on the mainland from Dixon Entrance to Icy Bay and on Baranof and Revillagigedo islands (where they were transplanted). From early spring until fall, the goats inhabit alpine and subalpine areas, feeding on grasses, sedges and forbs. In the winter, they move to windblown ridges where food is still available. Heavy snows force the goats to lower timbered elevations where they feed on shrubs, ferns and conifers. Winter weather and predation by wolves are the primary limiting factors for mountain goats.



Mountain goats may be observed from the Mendenhall Visitor Center (Bullard Mountain), up Tracy Arm, at Horn Cliff and LeConte Bay, near Petersburg, the Skagway-Carcross Road, and Adams Inlet in Glacier Bay. Mountain goats are often seen in small groups throughout the year, but males are usually observed alone in the winter. Both males and females have horns, which are black and short. Their white coats are shaggy, and they have long whiskers under the chin.

## • *Wolf*

Southeast Alaska supports approximately 600-700 wolves. Occasionally, a lone wolf may be seen prowling along the shoreline, but most wolves inhabit the remote areas of Southeast. Wolves occur on the mainland and on all major islands except for Admiralty, Baranof and Chichagof islands. Wolves may sometimes be seen in Petersburg Creek, Duncan Canal and Rocky Pass. The wolf population varies considerably depending on availability of food.



When compared with the wolves that inhabit the interior of Alaska, Southeast wolves tend to be smaller and darker with shorter, coarser fur. The fur on the Southeast wolves also seems to be less dense. Packs of wolves usually number from 3 to 5 in the Southeast, but some packs with as many as 15 animals have been sighted. Their range may include over 1,000 square miles. In the Southeast, wolves prey primarily on deer, moose, and mountain goats; but they will also feed on beaver, small mammals, birds, fish and carrion.

## • *Coyote*

Coyotes first appeared in Alaska in the early 1900s, apparently having migrated north from Canada. Today the range of the coyote reaches as far north as the Brooks Range. In Southeast Alaska, they seem to inhabit only the mainland and are not especially common. Coyotes are opportunistic feeders and adapt easily to a variety of habitat types. They prey on small mammals, especially hares, ground squirrels and mice. Coyotes also eat berries, invertebrates and carrion. Coyotes may be seen in the Stikine River drainage and the Chilkat and Taku River valleys. The coyote averages 30 pounds (which is about 1/3 the size of a wolf) and has a coat that varies in color from tan to gray.

## • *Red Fox*

Red fox populations in Southeast Alaska are sparse and occur primarily in major mainland drainages which connect to interior areas. They are probably most abundant in the Haines area. The populations fluctuate in response to prey populations. Red foxes feed on small mammals (especially voles, mice and hares), birds, eggs, invertebrates, plants and carrion.



## • *Lynx*

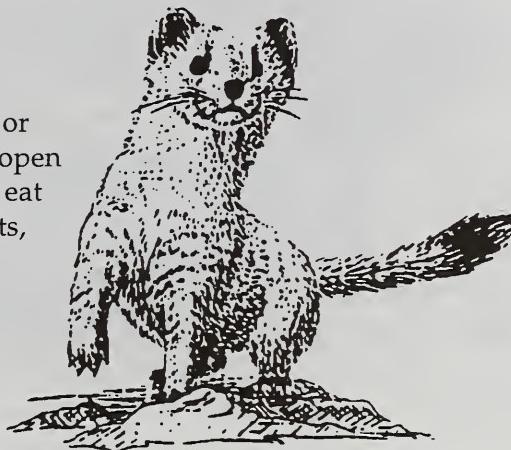
Lynx are also uncommon in Southeast Alaska, but they may be sighted on large river systems where they have migrated from interior populations. They have been observed in the Chilkat River drainage, along the Taku and Stikine rivers and occasionally around Yakutat. The lynx populations tend to fluctuate in direct relationship to the cycle of the snowshoe hare.

## •River Otter

River otters (often called land otters in Alaska) are abundant in Southeast Alaska and are often found in groups. A family unit is made up of a female and her pups, with or without an adult male. They feed on shellfish, crustaceans, insects, fish, frogs, birds, small mammals and some plants. They occur throughout the mainland and on islands where they inhabit streams, lakes and coastal shorelines. Their most important habitat is the marine intertidal community.

## •Weasel

There are two species of weasels in Alaska: the short-tailed weasel, or ermine, and the least weasel. Weasels inhabit wooded, brushy and open country, where there are abundant populations of rodents. Weasels eat 40% or more of their weight every day and feed primarily on rodents, including mice, voles and shrews. They will also eat birds, eggs, pikas, young hares, insects, fish, worms, carrion, berries and plants. Weasels occur throughout the mainland and on some of the islands in the Southeast.



## •Marten

Marten, members of the family which includes weasels, mink, otters and wolverines, thrive in old growth spruce forests where they feed extensively on voles and mice. Marten sometimes eat red squirrels, and they feed on berries in the late summer and fall. Marten tend to forage at night, but occasionally they feed during the day following a fresh snowfall or just before a storm. They are found on only a few islands in the Southeast, including Prince of Wales, Baranof, Chichagof and Admiralty.

## •Mink

Mink have a stable, large population in Southeast Alaska. They can be found mainly along the coastal areas where they feed on small mammals, marine invertebrates and fish. In the Southeast, most of the mink population occurs in a narrow band of habitat, about 100 yards deep that includes beach and forest. The most suitable areas for foraging include relatively steep, rocky beaches that support high densities of marine invertebrates like mussels and clams. Rocky beaches also provide adequate cover. Rock crevices and root cavities are critical for den sites.

## •Wolverine

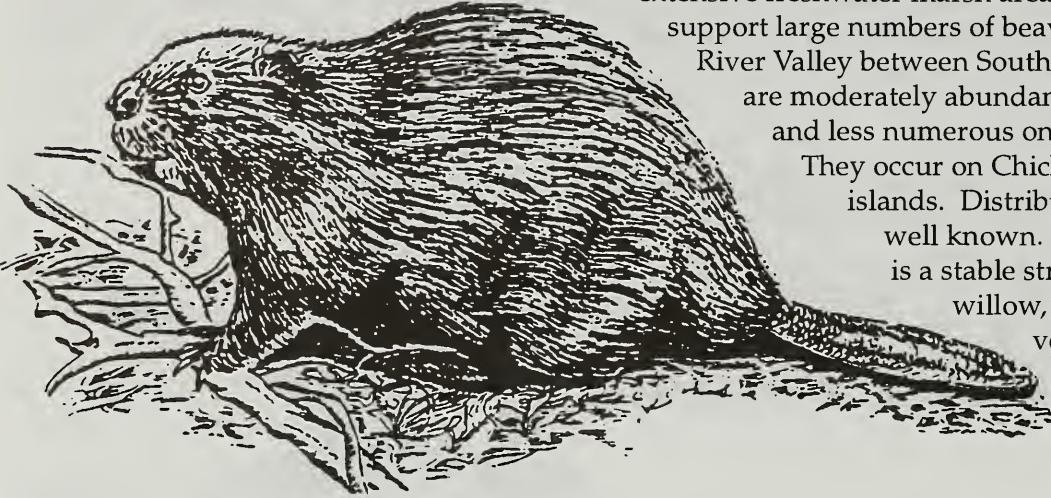
The wolverine is the largest terrestrial North American member of the family that includes weasels, mink, otters and marten. It is also known as the "devil bear," "carcajou" or "woods devil" and is still a common resident in mainland Alaska and on some of the islands of Southeast Alaska. There are moderate numbers of wolverines in the Stikine, Taku, Chilkat, Yakutat and gulf coast areas, but otherwise their populations are sparse. Wolverines have large territorial requirements and an apparently low reproductive rate. They are found from sea level to the tops of mountains. They feed heavily on snowshoe hares and carrion but also eat small mammals and birds, such as ptarmigan and grouse. Like most of the large carnivores, wolverines eat berries when other food is scarce.



*The wolverine is generally dark brown with a creamy white to gold stripe running from each shoulder along the flanks to the tail. Wolverines can vary in length from 36 to 44 inches and weigh between 22 pounds (females) and 32 pounds (males). They have long, curved non-retractile claws; they have a keen sense of smell and a well-developed sense of hearing, but their vision is poor. They primarily hunt at night, but they are often active during the long daylight hours of summer.*

## •Beaver

The beaver is North America's largest rodent. Beavers are found through most of the forested areas of Alaska and can be abundant in the major mainland river drainages. The Stikine and Taku river systems, where there are extensive freshwater marsh areas and deciduous woodlands, support large numbers of beavers, as does the Chickamin River Valley between South Fork and Leduc rivers. They are moderately abundant in the Unuk River drainage and less numerous on the Salmon River near Hyder. They occur on Chichagof, Admiralty and Baranof islands. Distribution on smaller islands is not well known. They prefer habitat where there is a stable stream flow accompanied by willow, aspen, cottonwood or birch vegetation. They eat not only bark but also aquatic plants of all kinds, roots and grasses.



## •Porcupine

Porcupines are primarily forest animals. They inhabit both coniferous and deciduous forests as well as willow thickets along water courses. They feed extensively on the inner bark layer of trees in the winter, and, in the summer, they feed on green vegetation, including leaves, buds and twigs of shrubs and trees. They use natural cavities or depressions for shelter and nesting. Wolves, coyotes, foxes, lynx and wolverines prey on porcupines.

## •Red Squirrel

Red squirrels can be found in spruce forests throughout most of Alaska and are one of the most commonly observed small mammals in the state. They are active all year but may remain inside their nest during severe cold or stormy weather. In Southeast Alaska, red squirrels inhabit the spruce-hemlock forests of the mainland and the larger islands. During the summer, they gather and store green spruce cones. Their caches may be as large as 15 to 18 feet in diameter and measure 3 feet deep. Red squirrels may also cache mushrooms on tree branches. They also eat seeds, berries, buds, fungi and sometimes insects and birds' eggs. Red squirrels are preyed upon by hawks, owls and sometimes marten.

## •Red-backed Vole

Red-backed voles are found throughout Southeast Alaska and as far north as Norton Sound. They prefer to live in the cool, damp forests. They can usually be distinguished from meadow mice, which they resemble, by their usually conspicuous reddish back, as well as the close, soft fur; shorter tail; smaller eyes and ears; and fatter bodies. The best places to find red-backed voles are near old logs or in mossy, overgrown areas. Fungi make up a great portion of their diet, though they also eat seeds, bark, insects and green plant material. They are an important food for hawks, owls, marten and other weasels, coyotes, and even wolves at times.

---

## Bibliography

Alaska Department of Fish and Game, *Wildlife Notebook Series*, 1989.

"Alaska Mammals," *Alaska Geographic*, Alaska Geographic Society, Anchorage, Alaska, 1981.

O'Clair, Rita, Robert Armstrong, and Richard Carstensen, *The Nature of Southeast Alaska*, Alaska Northwest Books, Anchorage, Alaska, 1992.

*The content information in this publication was reviewed by Ellen Campbell, Regional Wildlife Program Leader, U.S. Forest Service.*

*Alaska is home to over 98% of the United States population of brown bears and over 70% of the North American population.*

### • Brown Bear

Brown bears, known also as coastal brown bears or grizzly bears, are found throughout Southeast Alaska except on some islands south of Frederick Sound, such as Prince of Wales Island. Admiralty, Baranof and Chichagof islands support large populations of brown bears. On islands where there are brown bears, there are no black bears.

The brown bear resembles its close relative the black bear, but the brown bear is usually larger, has a more prominent shoulder hump and longer, straighter claws. The facial profile of the brown bear exhibits a concave shape, whereas the black bear shows a straight facial profile. Although this bear is called a "brown bear," it can actually be seen in any one of several colors, ranging from dark brown to blond.

The brown bear is an omnivore and eats berries, grasses, sedges, kelp, horsetail, cow parsnip, skunk cabbage, wild celery, fish, carrion, small mammals and roots. In some parts of Alaska, brown bears are known to prey on moose and caribou. Although generally solitary animals, brown bears will gather where food sources are particularly concentrated, such as streams where they can catch salmon swimming upstream to spawn.

Coastal brown bears tend to be large because of the availability of high protein food sources. Although weights vary during the year, a mature male may weigh between 400 and 900 pounds just prior to denning. An extremely large male bear can weigh as much as 1,400 pounds. Females weigh 1/2 to 3/4 as much as the males. Large bears can stand about 9 feet tall and have a skull that is almost 18 inches long.



*All brown bears should be observed from a distance of at least 100 yards. Special caution should be given to females with young and to bears protecting a food source. Brown bears may be observed at Pack Creek (by permit), Anan Creek, Hyder and Windfall Harbor. Observation towers have been constructed in these areas. Pack Creek is a U.S. Forest Service Natural Area that is managed in cooperation with the Alaska Department of Fish and Game.*

The information on the brown bear and the black bear was adapted from the *Wildlife Notebook Series*, Alaska Department of Fish and Game, 1989.

*Black bears are the most abundant and widely distributed of the three species of bears in North America.*

### • Black Bear

Black bears are found on the mainland and on most islands of Southeast Alaska. They are not found on Admiralty, Baranof, Chichagof and Kruzof islands which are inhabited by brown bears. Both black and brown bears occur on the southeastern mainland.

Black bears are the smallest of the North American bears. Adult bears stand about 26 inches at the shoulders and measure about 60 inches from nose to tail. An average adult male in spring weighs about 180 to 200 pounds and may weigh 20% heavier in the fall before it enters its den. Although black is the most often encountered color, brown and cinnamon bears are often seen on the mainland of Southeast Alaska. The rare blue or glacier phase may be seen in the Yakutat area and has been reported in other areas of Southeast. Only black is seen on the islands of Southeast. Nearly all black bears have a patch of white hair on the fronts of their chests, and black bears always have brown muzzles. They are most easily distinguished from brown bears by their smaller size, straight facial profile and their claws which are sharply curved and seldom measure over 1-1/2 inches in length. Black bears have very poor eyesight, but their senses of smell and hearing are well-developed.



Black bears are most often associated with forests, but depending on the season of the year, they may be found from sea level to alpine areas. Prime habitat for black bears is semi-open forested areas with an understory of fruit-bearing shrubs, herb grasses and forbs. Extensive open canopy areas are generally avoided.

Black bears are omnivorous and opportunistic feeders. In the spring, black bears are frequently found in moist lowland areas where early growing vegetation is available. The sedge and grass areas of beaches are particularly important. Black bears also feed on winter-killed animals, and, in the spring in some areas, black bears prey on newborn moose calves and deer fawns. Skunk cabbage is an important food and appears first on the edges of beaches. Open areas at lower elevations also receive considerable use in the spring. Bears favor berries (especially blueberries) during summer and fall, and from mid-August through fall, fish also become an important food item.

Black bears are commonly observed within the Petersburg Creek drainage on Kupreanof Island in the spring when early vegetation attracts bears onto the grass flats and in the summer and fall when the salmon are spawning. Bears may also be observed on lower portions of Anan Creek on the Cleveland Peninsula when the salmon spawn. This may be one of the largest concentrations of black bears in Southeast Alaska and offers a chance to view black bears during the summer and fall salmon runs. You may also see black bears at Petersburg Creek on Kupreanof Island and Blind Slough near Petersburg.

*Although bears are generally secretive and cautious animals, they are extremely powerful and should be considered as potentially dangerous to humans. They may protect a food source, and a female bear with cubs must always be respected.*

# Marine Mammals of Southeast Alaska

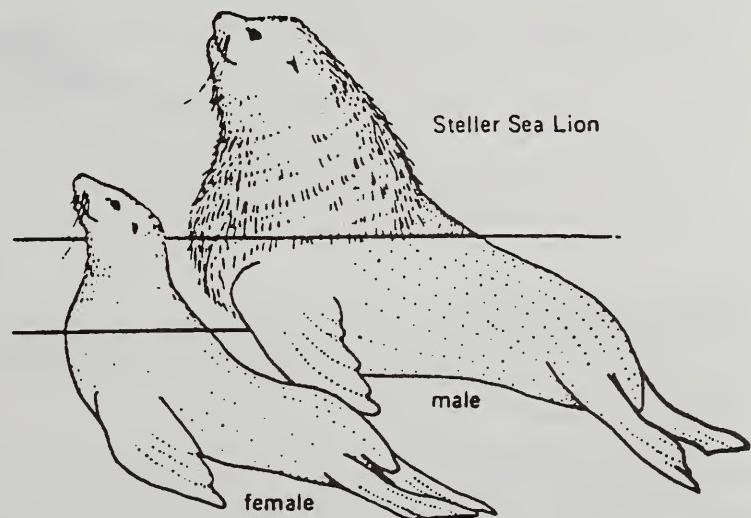
The rich aquatic environment of Southeast Alaska attracts numerous marine mammals. Especially in the summer, abundant food sources support great numbers of whales, dolphins and porpoises, seals, sea lions, and sea otters. Although many of these animals migrate to more temperate waters in the winter, some of these animals remain in Alaskan waters year-round.

Some of the marine mammals commonly found in Southeast waters are:

- Humpback whales
- Minke whales
- Orca (killer) whales
- Dall's porpoises
- Harbor porpoises
- Pacific White-Sided Dolphins
- Harbor Seals
- Sea lions
- Sea otters

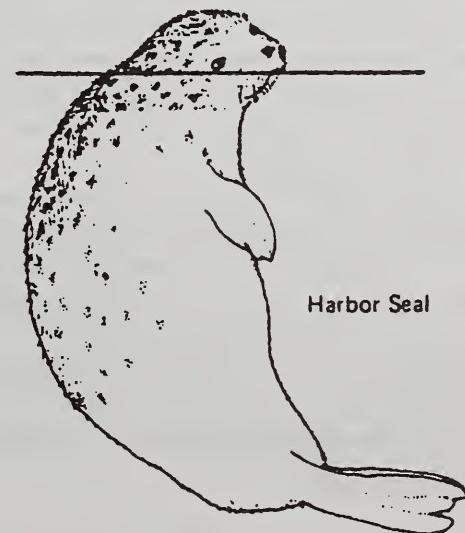
## Steller Sea Lion

- **DESCRIPTION** (Adult females: 8 ft, 600 lbs; adult males: 10 ft, 1200 lbs) External ear flaps are visible. Adult females are yellowish to light brown, and adult males are darker, sometimes reddish. Appear tan in the water. Males have pronounced foreheads and extremely large necks and shoulders with manes of long, coarse hair. Have rear flippers which turn forward so that on land they "walk" with a gait similar to land mammals.
- **HABITAT** Found primarily in coastal waters. Use remote rocky islands for rookeries and haulouts.
- **DIET** Pollock, flounder, herring, capelin, cod, salmon, rockfish, sculpins, squid and octopus.
- **BEHAVIOR** Gregarious. Generally aggressive. Growl and roar but do not bark. Swim using long front flippers for propulsion; steer with hind flippers. May dive to 600 feet.
- **STATUS** Listed in 1990 as threatened under the Endangered Species Act. World population is estimated to be 39-48% of its 1960s population. Numbers continue to decline. Currently estimated to be 64,000 in Alaskan waters.



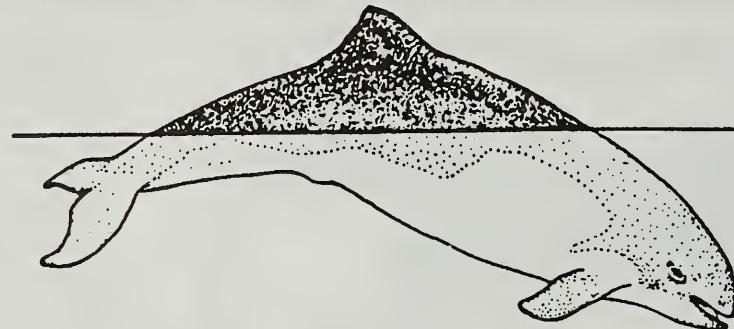
## Harbor Seal

- **DESCRIPTION** (Adults: 6 ft, 180 lbs) Short neck and short front flippers. Have no visible ear flaps. Covered with short, stiff, bristle-like hair. Two basic coloration patterns: a dark background with light rings OR light-colored sides and belly with dark blotches or spots.
- **HABITAT** Most often seen in coastal waters, but are found sometimes in rivers. Haul out onto reefs, beaches and ice to rest, give birth and nurse pups.
- **DIET** Walleye, pollock, cod, capelin, eulachon, herring, salmon, octopus, squid.
- **BEHAVIOR** In the water, harbor seals are graceful and efficient swimmers, using hindflippers for propulsion and foreflippers as rudders; but when on land, they move slowly and laboriously. They are usually solitary in the water but haul out in groups numbering from a few individuals to thousands. May dive over 600 feet and remain submerged for over 20 minutes.
- **STATUS** About 100,000 in Alaskan waters.



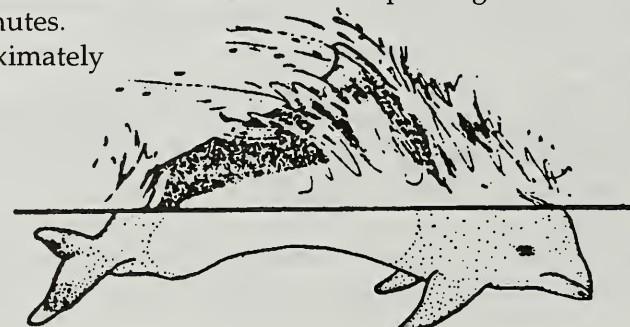
## Harbor Porpoise

- **DESCRIPTION** (Adults: 5 ft, 120 lbs) Brown, dark gray or black on back with lighter sides and white belly. Stocky body. Dorsal fin small and triangular.
- **HABITAT** Bays, harbors, and other shallow, inshore waters.
- **DIET** Squid and fish (including herring, mackerel, smelt)
- **BEHAVIOR** Usually do NOT ride the bow waves of boats. Will travel alone or in small groups. Do not jump out of the water. Shy. Dive frequently. Often seen close to shore, swimming with backs and dorsal fins rising and falling through the water.
- **STATUS** Common in Southeast Alaska; number estimated to be about 2500.



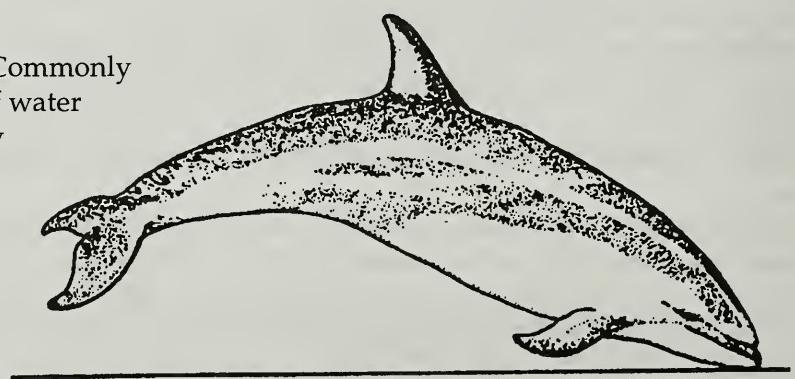
## Dall's Porpoise

- **DESCRIPTION** (Adults: 6 1/2 ft, 300 lbs) No distinct beak. Boldly colored; black body with white patch on sides and belly. Stocky body with small flippers and flukes. Dorsal fin triangular. White markings possible on dorsal fin and upper trailing edge of flukes.
- **HABITAT** Open ocean and coastal waters. Some stay year-round in Southeast Alaska.
- **DIET** Squid and fish
- **BEHAVIOR** Commonly ride the bow waves of boats. Fast, strong swimmers. Create sprays (called "rooster-tails") of water at high speeds or may roll slowly at surface. Sometimes seen "spinning" out of water. Will travel alone or in groups. Dive frequently for 2 to 4 minutes.
- **STATUS** Common in Southeast Alaska; approximately 1,500,000 in entire North Pacific.



## Pacific White-Sided Dolphin

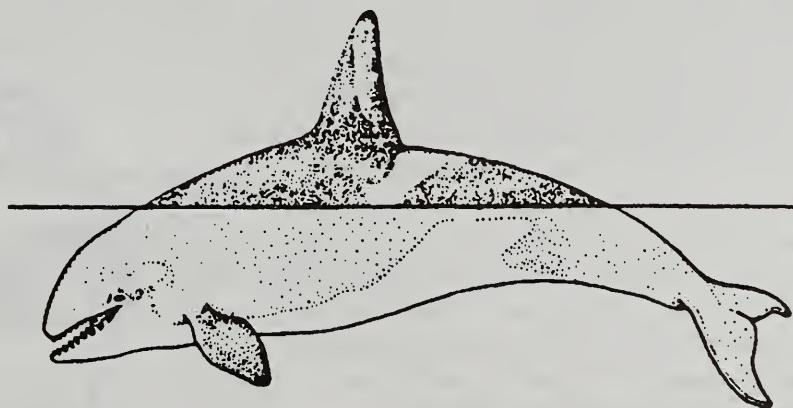
- **DESCRIPTION** (Adults 7.5 ft; 300 lbs) Stocky body with short beak. Dark back and white belly with white stripe on each side of dorsal fin extending from forehead, along ribs, to tail. Tall, sickle-shaped dorsal fin is dark; forward third of dorsal fin is dark, and trailing two-thirds is light.
- **HABITAT** Open ocean and inshore waters.
- **DIET** Fish, squid
- **BEHAVIOR** Gregarious. Vigorous swimmers. Commonly ride bow waves of boats. Often seen leaping out of water (or "breaching"). Will sometimes somersault. May travel in large groups, sometimes swimming in mixed groups with other dolphins.
- **STATUS** Approximately 970,000 in entire North Pacific. Commonly sighted near Ketchikan and along British Columbia's Inside Passage.



## Killer Whale ("Orca")

Found in all oceans of the world, killer whales are the only whales known to move freely between hemispheres, although they appear to prefer cooler waters. They have a highly evolved and complex social structure, living in groups, communicating with each other, protecting sick or wounded animals within the group and hunting together. Their method of cooperation when hunting is very similar to the way that wolves cooperate when attacking prey. Because of this hunting strategy, killer whales are capable of successfully attacking whales much larger than they are, such as gray whales and minke whales.

- DESCRIPTION** (Adult males: 26 ft, 8 tons; Adult females: 23 ft, 4 tons; At birth: 8 ft, 400 lbs) Round head with slight beak; stout body with large paddle-shaped flippers. Flippers can reach 6 feet long and can be 3 feet wide. Bold contrast in color -- shiny black body with white chin, belly and oval patch behind eye; gray area possible behind dorsal fin. Distinctive dorsal fin on males is straight and tall, up to 6 feet and shaped like an isosceles triangle; dorsal fins on females and immature males are shorter (about 3 feet) and sickle-shaped. The prominent dorsal fin on mature males makes them easy to identify.
- HABITAT** Southeast Alaska coastal waters. Orcas appear to migrate according to availability of food.
- DIET** Diverse. Will eat marine mammals, birds, fish, squid, turtles. (The mouth of a killer whale is well-adapted for hunting. Forty-six to 50 teeth point backwards and inwards and interlock to hold large prey and to tear it into pieces small enough to swallow.)
- BEHAVIOR** Orcas tend to live in groups, called pods, often consisting of from 3 to 40 animals. These family groups may be made up of one or more males, several females, juveniles and calves and may stay together for years. Within each pod, orcas communicate by making sounds, some of which are common among all orcas and some of which are unique to individual pod groups. Killer whales are normally seen swimming slowly along the surface of the water, then diving for 5 to 10 minutes before surfacing again. When hunting, they tend to "porpoise" through the water. Killer whales may commonly be observed breaching, "spyhopping" (when they raise their heads vertically out of the water) and "lobtailing" (when they slap the surface of the water with their tails).
- STATUS** Stable to abundant. 183 in Southeast Alaska.



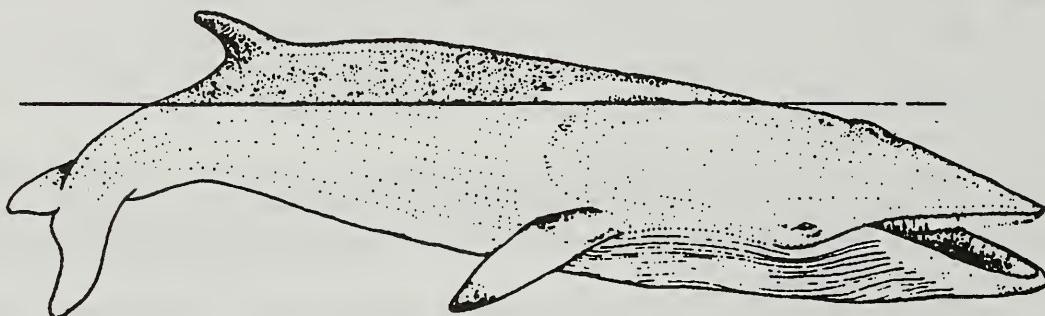
Information for this publication was reviewed by Judi Falk, Wildlife Biologist, U.S. Forest Service; Sue Mellon and Linda Shaw, National Marine Fisheries Service.

### *Bibliography*

- "Alaska Whales and Whaling," *Alaska Geographic*, Alaska Northwest Publishing Company, 1978.
- American Cetacean Society, whale information publications.
- O'Clair, Rita, Robert Armstrong and Richard Carstensen, *The Nature of Southeast Alaska*, Alaska Northwest Books, Anchorage, 1992.
- U.S. Forest Service, marine mammals publications.
- Walker, Theodore, *Whale Primer*, Cabrillo Historical Association and National Park Service, 1979.
- Wynne, Kate, *Guide to Marine Mammals of Alaska*, University of Alaska, Fairbanks, 1992.

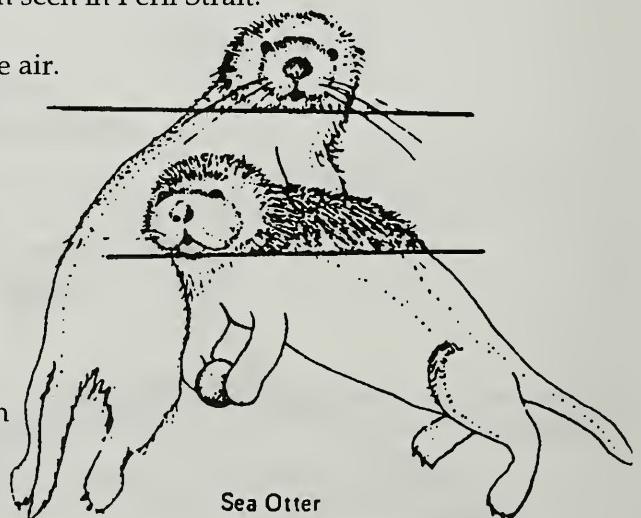
## Minke Whale

- DESCRIPTION** (Adult males: 26 ft, 6 tons; Adult females: 28 ft, 8 tons; At birth: 10 ft, 1000 lbs) Sleek body. Head is sharply pointed with flat upper jaw. Broad flukes. Fifty to 70 ventral throat grooves. Smallest baleen whale in the North Pacific. Dark body with light undersides, often with pale chevron on back behind head. Broad white band on pointed flippers. Prominent dorsal fin is sickle-shaped.
- HABITAT** Found in open ocean waters as well as in bays and shallow coastal areas. Often found near ice. Abundant throughout Alaskan waters in summer; most migrate to sub-tropics in winter. Frequently sighted in the inside waters of Prince William Sound and Southeast Alaska.
- DIET** Zooplankton and variety of schooling fish.
- BEHAVIOR** Fast swimmers. May breach. Seen alone or in groups of two to three; also known to concentrate in rich feeding areas in the spring and summer. When diving, flukes do not show. Dives last up to 20 minutes. Blows between dives are low, inconspicuous. Often approach boats.
- STATUS** 25,000 estimated to be in Northwest Pacific waters.



## Sea Otters

- DESCRIPTION** (4.5 ft; females 50 lbs; males 85 lbs) Dense fur is dark brown to blonde with lighter head. Prominent whiskers and silvery head of older animals have given them the name "Old Man of the Sea." Hind feet are webbed for swimming; toes on forepaws are short and stiff for handling food. Tail is long and flat.
- HABITAT** Commonly inhabit shoreline waters of outer coast and generally avoid the inside waters. Often found near submerged reefs, rocky beaches and in kelp beds. Often seen in Peril Strait.
- DIET** Fish, clams, crabs, oysters, mussels, sea urchins, octopus.
- BEHAVIOR** Commonly seen swimming on backs with feet in the air. Groom fur frequently. Make short dives to the bottom for food in 5 to 250 feet of water. Eat only when floating. They roll on their backs and place food on their chests, eating one piece at a time. Sometimes they crack clams by hitting them together or by placing a rock on their chests and hitting the clam against it. Searching for food is one of the most important daily activities. During storms, otters will wrap kelp around themselves to provide additional stability. Otters will also wrap kelp around their young to camouflage them while the adults dive for food.
- STATUS** At one time, sea otters were hunted almost to extinction in Alaskan waters. The early Russian settlement of Alaska was largely a result of the sea otter industry, and, after Alaska was sold to the United States, hunting even intensified. In 1911 with numbers of sea otters so low that in many areas they were completely exterminated, they were given protection by the Fur Seal Treaty (signed by the United States, Great Britain, Russia and Japan). Since then recovery of Alaska's sea otter population has been dramatic and today numbers about 150,000.



# Humpback Whale

*The humpback whale is the fifth largest of the great whales and is similar in size to a greyhound bus! It is the most common large whale sighted in the protected waters of Southeast Alaska.*

•**DESCRIPTION** (Adult males: 46 ft, 25 tons; Adult females: 49 ft, 35 tons; At birth: 16 ft, 2 tons) The body of the humpback is dark with some white on its throat, belly, flippers and flukes. Its head, flippers, hump just in front of the dorsal fin and the irregular shape of the dorsal fin are important keys to identifying a humpback .

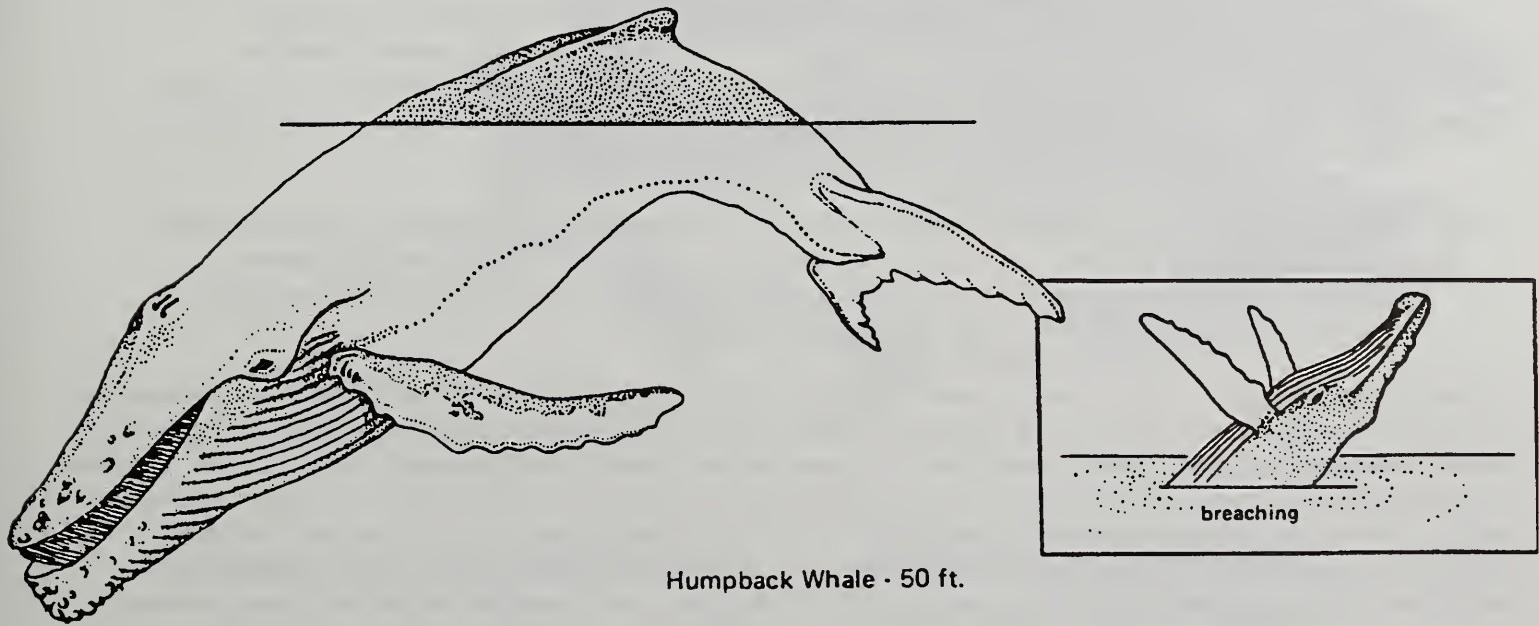
**HEAD** The whale has a flat, broad head with wartlike bumps and up to 400 two-foot long dark baleen plates on each side of its mouth.

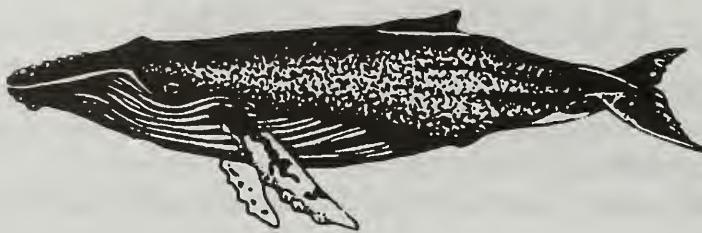
*"Baleen" is a rigid material (keratin) that forms fringed, comb-like plates that extend down from the upper jaw of baleen whales. Humpback whales use these baleen plates like a sieve or strainer when feeding. After filling their mouth with water and food, they use their huge tongue (weighing as much as 2 tons in an adult) to push the water out through the baleen and catch the food on the baleen's fringed edge. Humpback whales also have 12 to 36 ventral throat grooves (pleats), which allow the body wall to expand as the whale takes in water and food.*

**FLIPPERS** The flippers (or pectoral fins) of the humpback are scalloped, knobby edged and measure one-third its body length. These huge flippers are the largest of any whale. Sometimes these flippers can be seen stretching straight out of the water or arching gracefully across the stomach or back of the whale.

**DORSAL FIN** Look for the small dorsal fin two-thirds of way back on the body of the whale. It can be seen easily when the whale rolls at the surface of the water.

**FLUKES** Its flukes are broad with an irregular edge and can be seen clearly when the humpback makes a deep dive. Because the black and white color pattern on flukes are unique for each individual whale, flukes can be used to identify specific humpbacks. Individual whales can be recognized in feeding grounds, wintering areas and along migration routes. This method of observation has contributed substantially to the scientific data on these mammals.





•**HABITAT** Found in open ocean and coastal waters; often prefer shallow water for feeding and breeding.

•**DIET** Plankton, primarily krill (small, shrimp-like crustaceans about 1/2 inch to 2 inches long) and small schooling fish. Krill are very abundant in the nutrient-rich waters of Southeast Alaska, and there are often dense concentrations of krill swarming near the surface to feed on microscopic plants known as diatoms. A humpback can consume as much as a ton of food a day in the summer, but it fasts throughout the winter breeding season. The blubber, a thick layer of fat, stores the nourishment that the whale will use in the wintering grounds where krill is not available.

*Humpbacks have two major feeding methods: lunge feeding and bubble-net feeding.*

*During lunge feeding, the whale swims through the food source with its mouth wide open engulfing the food. During bubble-net feeding the whale locates the prey and dives below, discharging a circle of bubbles from its blowholes as it goes. As the bubbles rise, they form a noisy visible ring which seems to disorient the prey, causing them to congregate within the ring. The whale rises from below, engulfing the food and bursting through the water's surface with its mouth wide open. Sometimes several whales cooperate to blow bubbles to form the net when they are feeding together.*

•**BEHAVIOR** Often seen in groups of 2 or more; large groups are common. Often seen breaching, spyhopping and lobtailing.

***When breaching, the humpback may leap completely out of the water; when spyhopping, the whale raises its head vertically out of the water; and when lobtailing, the whale slaps the surface of the water with its tail.***

**MIGRATION** Humpbacks migrate along regular routes to winter in the warm waters near Hawaii for calving and breeding. Since the gestation period is approximately 11 months, humpbacks mate on the wintering grounds and give birth to calves the following year when the whales return to the warm waters. Calves nurse for their first 11 months, so adult females produce calves only every other year. The mother's milk is 40 to 50% fat, and the newborn whale consumes about 100 to 130 gallons per day for 8 to 12 months. While nursing, a young whale can grow as much as a foot a month.

**SINGING** Winter is the time for singing. Although the whale has no functional vocal cords, their "songs" may last 6 to 18 minutes or in a sequence of several hours. As the breeding season progresses, new themes may be introduced or old songs may be modified. Only the male sings, and very little singing is done at the feeding grounds.

•**STATUS** Endangered. Three separate populations include the North Pacific and North Atlantic populations in the northern hemisphere and one population in the southern hemisphere. These populations do not migrate across the equator but make yearly migrations from warm winter waters to cold summer waters. A 1991 estimate of the North Pacific humpback population was from 1400 to 2000 whales, with 300 to 350 occurring in Southeast Alaska. These numbers represent about 8 to 13 percent of the population size prior to commercial whaling. Humpbacks have been protected from commercial harvest since 1966. Although the majority of humpback whales are seen in Southeast Alaska between April and November, a few humpbacks can be seen here year round.

# *Life Cycle of Pacific Salmon*

•9. In Alaska, the months in which salmon spawn vary depending on the species, but most salmon enter spawning streams sometime from May to November.

•8. Once in the ocean, they remain there until they mature and return to spawn in the stream where they hatched.

•7. When they begin migrating to the ocean, they are called smolts.

•6. Once they emerge from the gravel, they are known as fry. The fry of some species migrate directly to the ocean, and others remain in freshwater for up to 2 years before beginning their migration to salt water.

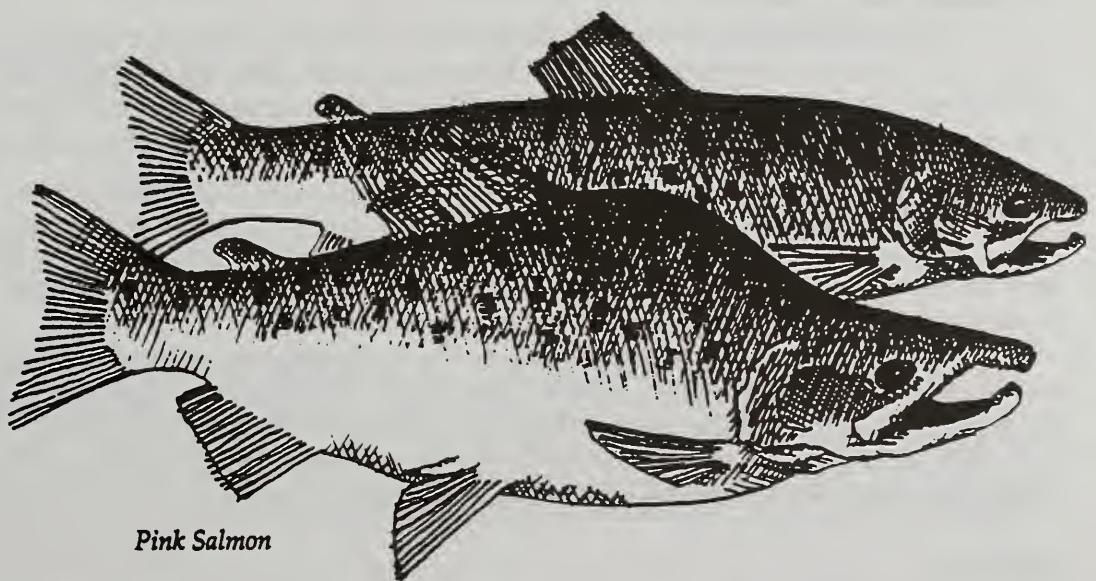
•1. In freshwater streams, adult females lay thousands of eggs in shallow, gravel nests, called redds.

•2. Before being covered by gravel, the eggs are fertilized by the males.

•3. Both adult females and males die after spawning.

•4. The eggs hatch in winter or spring.

•5. The young salmon, called alevins, remain in the gravel until they absorb their yolk sacs.



*Pink Salmon*

*Alaska has five Pacific salmon: pink salmon, chinook salmon, coho salmon, sockeye salmon and chum salmon.*

## Pink Salmon ("Humpbacks" or "Humpies")

### • General Background

The pink salmon is the smallest Pacific salmon native to North America, weighing 3-1/2 to 4 pounds and measuring 20 to 25 inches long. They are also called "humpbacks" or "humpies" because of the pronounced hump which develops on the backs of adult males before spawning. In many Alaskan coastal communities, pink salmon are considered Alaska's "bread and butter" fish because of their importance to commercial fisheries and thus to local economies.

### • Life Cycle

Pink salmon have the shortest life cycle of all the Pacific salmon -- only 2 years. Adult pink salmon enter Alaska spawning streams between late June and mid-October, and most spawn within a few miles of the coast, commonly within the intertidal zone at the mouths of streams.

After the eggs hatch in early to mid-winter, the smolts migrate to the ocean in late winter or spring. Once in the ocean, the juvenile pink salmon move along the beaches in dense schools near the surface, feeding on plankton, larval fishes and insects. Predation is heavy, but growth is rapid. By fall, the juvenile salmon are 4 to 6 inches long and are moving into their feeding grounds in the Gulf of Alaska and Aleutian Islands areas. When they're 2 years old, they return to spawn.

### • Fishery

Pink salmon fisheries are important in all coastal regions of Alaska south of Kotzebue Sound. Commercial canning and salting of pink salmon began in the late 1800s, but, during the 1940s and 1950s, runs declined markedly. Since then intensive efforts have been made to rebuild and enhance those runs through hatcheries, fish ladders and improved management practices. In 1989 Alaskan harvest of pink salmon represented just over 80% of the total North American harvest and almost 40% of the total worldwide catch. Pink salmon also contribute substantially to the catch of sport anglers and subsistence users in Alaska.

## Chum Salmon ("Dog Salmon")

### • General Background

Chum salmon have the widest distribution of any of the Pacific salmon and are harvested heavily in Arctic, northwestern and Interior Alaska. They are a traditional source of dried fish for winter use. When males spawn, they develop very large teeth which partially accounts for their name of "dog salmon." Chum salmon can vary in size at maturity from 4 to over 30 pounds, although they average 7 to 18 pounds.

### • Life Cycle

Chum salmon often spawn in small streams, intertidal zones, small side channels and other areas of large rivers where upwelling springs provide excellent conditions for egg survival. Some chum in the Yukon River travel over 2,000 miles to spawn in the Yukon Territory.

As young fry, chum salmon do not stay in freshwater as do chinook, coho and sockeye. Like pink salmon, they migrate to the ocean during that spring. Chum fry feed on insects in the streams and estuaries before forming schools in the ocean where their diet usually consists of zooplankton. They spend one or more winters of their 2 to 5 year life cycle in the Bering Sea and Gulf of Alaska. Most chum mature at 4 years of age, although there is considerable variation in age at maturity.

### • Fishery

The market for commercially-caught chum salmon has increased in recent years, and the Alaska Department of Fish and Game has built several hatcheries primarily for chum salmon production. In Arctic, northwestern and Interior Alaska, chum salmon remain an important year-round source of fresh and dried fish for subsistence and personal use purposes. Sport harvest usually totals fewer than 25,000 chums.

# Chinook Salmon ("King Salmon") -- Alaska's State Fish

## **•General Background**

The chinook salmon is one of the most important sport and commercial fish native to the Pacific coast of North America. It is the largest of all Pacific salmon, commonly weighing over 30 pounds. Chinook salmon are also called quinnat, tyee, tule, spring and blackmouth.

## **•Life Cycle**

Alaska streams normally receive a single run of chinook salmon between May and July. Chinook salmon mature in 2 to 7 years; and, therefore, spawning fish may vary greatly in size. Small chinook that mature after spending only one winter in the ocean are commonly referred to as "jacks" and are usually males.

Chinook salmon often make extensive freshwater spawning migrations to reach their home streams on some of the larger river systems. Yukon River spawners bound for the extreme headwaters in Yukon Territory, Canada, will travel more than 2,000 river miles during a 60-day period. Chinook salmon, like other salmon, do not feed during the freshwater spawning migration, so their condition deteriorates gradually during the spawning run.

The newly laid eggs hatch in late winter or early spring. Most young chinooks remain in fresh water for a year until the next spring when they migrate to the ocean. Juvenile chinooks in fresh water first feed on plankton, then later eat insects. In the ocean, they eat a variety of organisms including herring, pilchard, sandlance, squid and crustaceans. Salmon grow rapidly in the ocean and often double their weight during a single summer season.

*The largest chinook salmon on record weighed 126 pounds and was taken in a fish trap near Petersburg, Alaska, in 1949. The largest sport-caught chinook salmon weighed 97 pounds and was taken in the Kenai River in 1986.*

## **•Fishery**

There is an excellent commercial market for chinook salmon because of their large size and their excellent flavor and texture. Fish taken commercially average about 18 pounds. Also, chinook salmon are perhaps the most highly prized sport fish in Alaska, with over a reported 76,000 taken annually (1988). The Southeastern and Cook Inlet areas are fished extensively for chinook salmon. Chinook salmon also contribute substantially to subsistence users, especially in the Yukon and Kuskokwim river areas.

# Coho ("Silver Salmon")

## **•General Background**

Coho salmon are found in the coastal waters of Alaska from the Southeast to Point Hope of the Chukchi Sea and in the Yukon River to the Alaska-Yukon border. Although they have been known to weigh up to 30 pounds, they usually weigh 8 to 12 pounds and measure 24 to 30 inches long.

## **•Life Cycle**

Coho salmon prefer small streams and shallows in which to spawn, and in large rivers adults may need several weeks or months to reach their headwater spawning grounds. They usually enter spawning streams from July to November. After the eggs have hatched the following spring, the young coho spend one to 2 years growing in freshwater. These fry live in ponds, lakes and pools in streams and rivers, feeding on insects. Some males mature early (called "jacks") and return after only 6 months at sea, while most fish stay 18 months before returning as adults.

## **•Fishery**

The commercial catch of coho salmon reached 6.25 million fish in 1986, increasing significantly from low catches in the 1960s. About half of this catch was taken in Southeast Alaska. The coho salmon is a premier sport fish and is taken in fresh and salt water from July to September. In 1986 anglers throughout Alaska took 201,000 coho salmon.

# Sockeye Salmon ("Red Salmon")

## • General Background

Sockeye salmon make up one of the most important commercial fisheries on the Pacific coast of North America. They are also increasingly sought after by sport anglers and continue to be an important mainstay of subsistence users. Sockeye can grow to almost 3 feet in length and weigh up to 15 pounds, but they average 25 inches in length with a weight of 6 pounds. Both males and females turn brilliant to dark red on the back and sides when they spawn.

## • Life Cycle

Sockeye salmon travel thousands of miles from ocean feeding areas to spawn in the same freshwater system where they were born. They return from the ocean during the summer months after spending one to 4 years in the ocean. Spawning occurs in rivers, streams and upwelling areas along lake beaches. Freshwater systems with lakes produce the greatest numbers of sockeye salmon.

In the spring, the fry move to rearing areas. In systems with lakes, juveniles usually spend one to 3 years in freshwater before migrating to the ocean in the spring as smolts weighing only a few ounces. However, in systems without lakes, many juveniles migrate to the ocean soon after emerging as fry.

Sockeye salmon return to their "home stream" to spawn after spending one to 4 years in the ocean. Mature salmon that have spent only one year in the ocean are called "jacks" and are, almost without exception, males. Once in the ocean, sockeye salmon grow quickly. While in freshwater, juvenile sockeye salmon feed mainly upon zooplankton and insects. In the ocean, sockeye salmon feed on zooplankton, larval fish, small adult fish and, occasionally, squid.

In some areas, populations of sockeye salmon have developed which remain in freshwater all their lives. This form of sockeye salmon, called "kokanee," is much smaller than the ocean-reared salmon and rarely grows over 14 inches long. Populations of kokanee are common in Alaska.

## • Fishery

The largest commercial harvest of sockeye salmon in the world occurs in the Bristol Bay area of southwest Alaska where 10 to 20 million sockeye salmon are caught each year. Relatively large harvests, one to 6 million sockeye salmon, are also taken in Cook Inlet, Prince William Sound and Chignik Lagoon.

There is a growing sport fishery for sockeye salmon throughout the state, most notably in the Russian and Kasilof rivers on the Kenai Peninsula and the various river systems within Bristol Bay. Subsistence users harvest sockeye salmon in many areas of the state, principally in the Bristol Bay area.

### **Salmon, Eagles & Bears**

*For salmon, whose life cycles occur in both fresh and salt waters, the ocean provides the abundant food required for rapid growth. In turn, these native fish return to streams where they themselves provide a rich food source for two of Alaska's most famous predators. Both eagles and bears feed substantially on salmon during their spawning runs. In Southeast Alaska, bald eagles congregate wherever salmon are spawning. The largest such concentration occurs on the Chilkat River near Haines.*

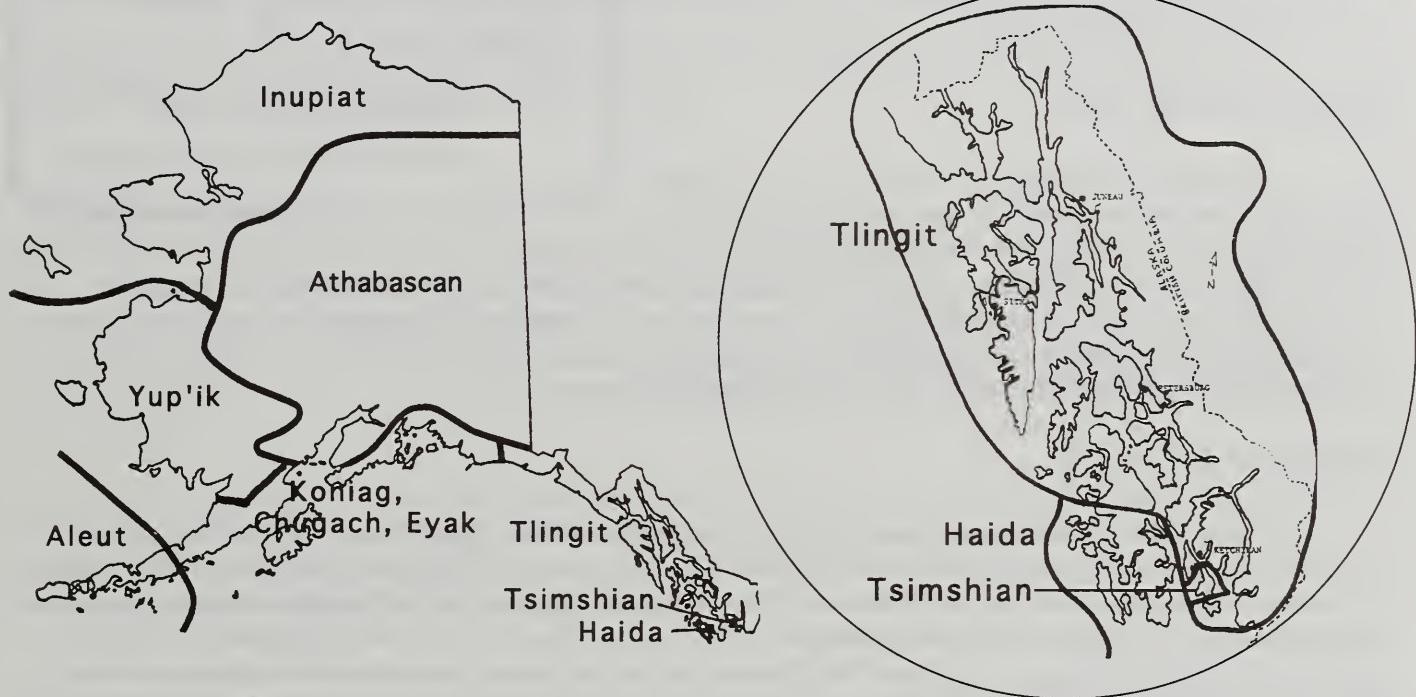
*Alaska's bears are also found feeding at salmon streams, generally in mid to late summer. Both brown bears and black bears feed on spawning salmon, but normally they are not seen feeding together.*

*Even spawned-out salmon that die and are not eaten by bears and eagles enter the aquatic food chain and contribute to the life cycle of future generations of salmon. As salmon decompose, rich nutrients return to the rivers and streams and provide a source of food for invertebrates which, in turn, provide a food source for next year's salmon.*

•This publication was adapted from a United States Forest Service information publication and from the "Alaska Wildlife Notebook Series," Alaska Department of Fish and Game, 1988-1989. Content information was reviewed by Ron Dunlap, Regional Fisheries Assistant Program Leader, U.S. Forest Service.

# Southeast Alaskan Native Cultures --

Within Alaska there are five major groups of indigenous people. These groups are distinguished by differences in culture, language, and the particular geographic regions in which they live. The ancestors of these native people are thought to have moved across the Bering land bridge from Siberia during the last great ice age. As the glaciers retreated in Southeast Alaska about 10,000 years ago, groups gradually moved into these coastal areas. The five major indigenous groups include: the Eskimos of the North and Western Coast, the Aleuts of the Aleutian Islands, the Athabaskans of the Alaskan Interior, and the Tlingits and Haidas of Southeast Alaska. The Tsimshian people have more recently established residency in Southeast Alaska, moving here from Canada in 1887.



## Tlingit, Haida, and Tsimshian

The Tlingit (*Klink-it*), Haida (*Hy-duh*), and Tsimshian (*Sim-see-on* or *Shim-shee-an*) people live on the coastal islands and mainland of Southeast Alaska. The Tlingits originally inhabited all of this region, settling in villages between Yakutat Bay and Portland Canal and on several islands of the Alexander Archipelago. In the 17th or 18th Century, the Haidas immigrated into Southeast Alaska from the Queen Charlotte Islands in British Columbia, settling in the southern portion of Prince of Wales Island, an area that had previously been occupied by Tlingits. The Tsimshians moved from Canada into Southeast Alaska in 1887 and settled on Annette Island.

The Tlingit, Haida and Tsimshian people are the northern most groups representing the Northwest Coast Native Culture. Although the Tlingits, Haidas, and Tsimshians are different in many ways from each other and their languages are unrelated, they share the elaborate social, economic, and cultural patterns characteristic of Northwest Coast Native groups from Alaska to Washington. Only the Tlingit share common heritage with other Native Alaskans because their language shows a distinct relationship to the language of the Athabaskans in the interior of Alaska.

# Tlingit and Haida

## A Rich Heritage

The Tlingit and Haida people have lived for thousands of years in Southeast Alaska. They have developed cultures rich in traditions that are passed on from generation to generation. Today, Tlingits and Haidas live throughout Alaska, although there are many who still live on native lands or on historical village sites and follow traditional lifestyles. As Alaska grows and its population becomes more diverse, the Tlingits and Haidas are striving to preserve their traditions and cultural heritage.

## Historic Village Sites

Historically, Tlingits and Haidas lived in villages during the winter and moved to seasonal camps during the spring, summer and fall to fish, hunt, and gather. Winter villages were often located on sheltered bays with sandy beaches for landing canoes and with convenient access to salmon streams, berry patches, clam beds, fresh water, timber and trails inland. Winter houses are traditionally made of cedar planks, measuring 20 feet by 30 feet, but occasionally the house could be as large as 40 feet by 60 feet. Twenty to 30 people in four to six families historically occupied these houses.

## Abundant Resources

Southeast Alaska is a land that is rich with natural resources. Traditionally, one of the primary food sources for Native Alaskans was, and continues to be, eulachon, a fish prized for its rich oil. The oil, processed into a grease, is eaten with dried salmon or herring eggs and has a tradition of use as an important trade item. Living near the ocean, Tlingit and Haida also caught seals and halibut, harvested seaweed, and collected bird eggs. On land, they hunted moose, mountain goat, and deer. Other food supplies, used especially in the winter, included clams, cockles, and chitons. This subsistence tradition is still very much in evidence today.

Traditionally, clothing was made from animal skins and plant materials. Men often wore skins from deer and caribou, rain hats were woven from spruce roots, and women's skirts were woven from the inner bark of the cedar tree. Cloaks were made from otter fur or cedar bark. Ceremonial and warfare clothing was more elaborate. One of the most distinctive clothing items of the Tlingits and Haidas was the Chilkat robe or blanket, traditionally made from mountain goat wool and cedar bark strips. Today many Native artisans continue to weave fine examples of this ceremonial regalia.

## Social Organization

Within Tlingit and Haida societies, social organization (which includes group membership and inheritance of leadership and wealth) is determined by matrilineal descent. Each society can be divided into two matrilineal "moieties" (or groups): *Raven* and *Eagle or Wolf*. Within each moiety, there are matrilineal "clans" which are named after animals or mythical beings. These symbols or crests are represented on clothing, blankets, totem poles, and other property of the clans. Clans have always been very important within the Tlingit and Haida societies, and historically it was the clan itself that held ownership to property, including houses, canoes, fishing grounds, ceremonial garments, crests, songs, dances, and stories.

**A Native artisan reflects on her heritage:** *"Beauty was in everything in the lives of our ancestors. Everything they used in their daily lives -- their bowls, their boxes, their robes -- everything was decorated and made beautiful. Our people surrounded themselves with beauty, and it all meant something. It told something about you."*

--Janice Criswell, Artist, Haida/Tlingit, Raven, Owl Clan  
(from Alaskan Native Cultures)

# Tsimshian

*The Tsimshian people are proud of their cultural heritage; and there is a strong interest today in preserving their legacy, especially in song, dance and art.*

## Settling New Metlakatla

Historically, the Tsimshians inhabited the coast and interior of northern British Columbia. In 1887 a group of Tsimshians moved from Metlakatla in Canada to Southeast Alaska and established the self-sufficient community of New Metlakatla on Annette Island. New Metlakata was founded on utopian principles. The belief of cooperating for the common good of all community members is still prevalent there today. Although Tsimshian people live throughout Southeast Alaska today, New Metlakatla remains primarily a Tsimshian community. New Metlakatla is now part of the Annette Island Indian Reserve, the only federal reservation in Alaska.

## Abundant Resources

When the Tsimshians first arrived on Annette Island, they relied on what the land provided throughout the year. During the winter, the Tsimshians lived in houses constructed of red cedar. When winter was over, they moved to spring and summer camps in order to fish, hunt and gather available plants, fruits and berries. The Tsimshians also utilized natural resources for tools, building materials, and artwork.

Traditionally, the Tsimshians harvested halibut, abalone, herring, bird eggs, and seaweed for food. They also fished for eulachon. Salmon were especially important as a food source, and good salmon runs were essential to protect the people from winter famine. In the summer and fall, berries were gathered and either dried or preserved in grease. Women first gathered early-ripening salmonberries and later in the fall gathered wild crabapples and high bush cranberries. Plant roots and shoots were collected and eaten fresh. The bark of red cedar, maple, and birch trees provided materials for making baskets to be used for storage containers and cooking; and timber provided materials for wooden objects, such as storage boxes and chests, canoes, tools, and fishing and hunting gear. During a visit to Metlakatla today, one might still find the opportunity to observe the continued pursuit of these traditions.

## Social Organization

Prior to European contact, the Tsimshians most likely had a dual societal structure. It was only after European contact that their society was divided into four matrilineal clans. For coastal Tsimshian, these clans include *Killer Whale*, *Wolf*, *Eagle*, and *Raven*. The basic social unit within Tsimshian society is called a "house," which traditionally owned fishing, hunting, and gathering territories. It is also the "house" which owns the crests, songs, and names which represent it.

**A Tsimshian writer reflects on her heritage:** *Our forefathers were a people of vision, pride, intelligence, strength, and determination. They were also a people who valued respect, not only for themselves, but for other people, for all living things, and all other things that the Great Spirit had provided for them.*

--Gertrude Johnson, Tsimshian,  
Wolf, Lachiboo Clan (from  
Alaskan Native Cultures)

# *Southeast Alaskan Native Cultures --*

## *Potlatch -- The Ceremonial Feast of the Tlingits, Haidas, and Tsimshians*

The potlatch is the major ceremonial event held by Tlingit, Haida, and Tsimshian societies. Potlatches are held on special occasions, such as funerals, weddings, and house raisings, and for naming ceremonies, and raising totem poles. The potlatch is a significant expression of generosity and status. Traditionally, the hosts of the potlatches who gave away the most gifts attained the highest status. The status was symbolized by special potlatch hats with rings indicating the number of potlatches a clan had sponsored. Those who were invited guests at one potlatch would later be hosts at another potlatch. In addition to the distribution of gifts, potlatch ceremonies include feasting, singing, and dancing.

## *Art of the Tlingits, Haidas, and Tsimshians*

The Tlingits, Haidas, and Tsimshians share many cultural traditions. Their visual art form is an important part of this shared tradition, and it helps to define and express the complex social structures of these unique societies. Most of the visual art of the Tlingits, Haidas, and Tsimshians represent characters or events that have been recorded in the oral traditions of songs and legends. These songs and legends tell the history and beliefs of each group. Therefore the visual art, including all that is painted, carved and woven, is a visual record of their oral tradition. Although there are similarities between the visual art of the Tlingits, Haidas, and Tsimshians, each group has developed its unique style. Today these arts are being renewed and are a strong representation of the Northwest Coast Native Culture.

*To learn more about Alaskan Native Cultures, visit the Alaska State Museum in Juneau, the Sheldon Jackson Museum in Sitka, or the Sheldon Museum in Haines.*

### *From the Past to the Present*

*Dramatic change for the Native People of Alaska began when Europeans first arrived in Southeast Alaska to hunt sea otters. In the years which followed, increased contact with Europeans through hunting, trade and settlement disrupted traditional native life styles. After Alaska became a state, ownership of traditional native lands came into dispute. As a result, the Alaska Native Claims Settlement Act was signed into law in 1971. This act provided a cash settlement and 44 million acres of land to be distributed to 12 regional and 200 village corporations. The Act also abolished traditional hunting and fishing rights yet provided for Native Alaskans to continue "subsistence" hunting and fishing. Today, almost 25 years after the Alaska Native Claims Settlement Act, Native Alaskans work to adapt to the changes which continue to impact their cultures. Programs within the Tlingit, Haida, and Tsimshian societies strive to maintain their cultural heritage by teaching their traditions to the new generations.*



### *Bibliography*

Langdon, Steve J., The Native People of Alaska, Greatland Graphics, Anchorage, 1993.

Olson, Wallace M., The Tlingit, Heritage Research, Auke Bay, 1991.

Sturtevant, William C. (Editor), Handbook of North American Indians Vol. 7, Smithsonian Institution, Washington, 1990.

Tripp, Angela (Editor), Alaskan Native Cultures Vol. 1, Albion Publishing Group, Santa Barbara, CA, 1994.

# *Totem Poles*

*Prior to the turn of the century, totem poles were carved exclusively in Southeast Alaska and western British Columbia by groups of Native people who lived within the broad realm of the "Northwest Coast Tradition." Many of the artisans who carved these remarkable wooden monuments were Tlingits, Haidas, Tsimshians, Kwakiutl and Bella Bellas. The historic art of carving totem poles continues today throughout the Southeast as a unique and creative representation of Native Southeast Alaskan culture.*

Totem poles are undoubtedly the most recognized of all art objects in Southeast Native heritage. Originally designed in cultures with no written language, the dramatic carvings on totem poles serve as reminders of events, people and legends.

*Totem poles are carved for several different purposes or occasions. Some of the different types of poles include:*

- **Memorial Poles**

Memorial poles are erected to honor an important person at the time of death. Many of these poles can be very simple -- with a crest figure representing the person's clan on top of a plain pole. The crest figure might be the Eagle, Raven, or one of the other clan symbols such as Bear, Beaver or Frog.

- **Mortuary Poles**

Mortuary poles are similar to memorial poles, except that an open section is carved in the back to hold the remains of the deceased.

- **Potlatch Poles**

Potlatch poles are raised at the same time that a potlatch is given. A potlatch, the name coming from the Chinook trade jargon meaning "giving," is an important social occasion which commemorates significant events in Southeast Native Alaska societies.

- **Heraldic Poles**

Heraldic poles proclaim the social standing of a wealthy individual or the head of the house. It bears the family crests and is attached to the front of a building. It often has an oval entrance large enough for a person to pass through.

- **House Pillars**

House pillars or totem poles designed on posts or pillars inside houses were important in the construction of early houses. Many are often carved with crests of the owner. Because they are protected from weather, house pillars are often found today in excellent condition.

- **Ridicule or Shame Poles**

Ridicule poles are erected to shame an individual or family for their failure to pay a debt or for breaking a trust. The pole is taken down when the wrong is corrected.

- *Traditional totem poles were never carved for religious ceremonies or worshipped as religious objects.*
- *Even more numerous than totem poles were "house-front paintings." These important painted fronts represented real crest boards and were exhibited by many families throughout the Northwest Coast of North America.*

---

## *The Art of Carving the Totem Pole*

Traditionally, totem poles were carved by artists who had been trained by master craftsman through an apprenticeship system. A clan chief would select the figures he wanted on the pole and commission the artist to design it.

Red cedar was used for most of the totem poles found in Southeast Alaska, although yellow cedar (Alaska cedar) was used in the north where red cedar was unavailable.

Originally, totem figures were carved with tools made from stone, bone or shell. Native carvers began extensive use of adzes made from sharp iron blades after the Europeans began trading with Northwest Coast tribes. A smooth, even textured pole was the mark of a highly skilled carver.

Before commercial paints became available, paint was applied sparingly and the colors came from a variety of sources:

- soot, graphite or charcoal was used for black
- red ochre produced reds, browns and yellows
- copper sulfide produced blue-green
- baked clam shells and burned limestone provided white

*Crushed salmon eggs were used to make a binding medium and mixed with the color before it was applied to the pole.*

---

## *Raising the Totem Pole*

The raising of a large totem pole requires skill and cooperation and involves tradition and ceremony. Often it requires more than a hundred men to carry the pole to the site it will occupy. The base of the pole is placed over a deep hole, with a trench extending out from it. The top of the pole is then raised using wooden supports and a rope. This rope is attached to the upper end of the pole and passed over the supporting frame. Everyone pulls on the rope at once to raise the pole to its upright position. Historically, totem poles, once erected, were not removed (except for ridicule poles), even if the people moved to a new village site.

---

## *Restoring Southeast Alaska's Totem Poles*

It is known from the records of explorers, such as Captains George Dixon, George Vancouver, Don Allessandro Malaspina and John Bartlett, that totem poles were present in Southeast Alaska as early as the late 1700s. But over the years, many totem poles were lost due to weathering or abandonment. In the 1930s, the U.S. Forest Service through the Civilian Conservation Corps, began a restoration project in Southeast Alaska. During this time, over 200 totem poles were either restored or replicated.

---

## *Common Native Totem Designs*

The various symbols used on totem poles are the exclusive property marks of clans and families. Totem figures are usually animals, considered by the people to be related by blood to a specific family and taken as its symbol. The symbols are proudly displayed on other family property such as houses, canoes, garments and household possessions.

- Because of their cultural significance, the Eagle and the Raven are portrayed on many totem poles throughout Southeast Alaska.

*In story and legend, the Raven was given great super-natural powers and importance.*

*The Raven is said to have created man, brought daylight, arranged the rivers and lakes, and indulged in his liking to adventure. He was capable of incredible feats that surpassed the powers of animals and humans. As he traveled around the world, he changed his form whenever the occasion demanded and often appeared as a man to conceal his identity. To accomplish other purposes, he became a woman, a Chief's daughter or a western hemlock needle. He dove beneath the ocean, lived in a whale or ascended to the skies at will.*

*The Raven, then, is depicted in each instance in the form that the legend illustrates. Whenever he appears as a bird, he is clearly identified by his straight beak. This special mark sets him apart from any other bird.*

- Other birds often depicted are the Cormorant, Crane, Owl and Loon.
- Land animals include the Bear, Frog, Wolf, Land Otter and Groundhog.
- Sea animals frequently include the Whale, Blackfish, Shark, Seal and Sea Lion.
- Butterflies, Dragon Flies, Mosquitoes and Sea Monsters are also seen occasionally.
- Certain other symbols are used by almost all carvers. These include claws, wings and beaks attached to birds or their human forms. Fins or fluted tails signify fish or sea mammals. An elevated snout, sharp teeth and claws identify the Wolf. The Halibut and the Frog are also used. The Frog has a wide toothless mouth, flat nose and no tail. Beaver may be identified by large teeth, a stick held in his front paws and a scaly, paddle-shaped tail.
- The Hawk has a large, curved beak that turns back to touch its face, while the Eagle has a large, curved beak that turns downward. The Bear has large paws, a large mouth set with teeth and a large, round nose.
- The figure of a human might be included if he were the first person to sight or witness a particular event, object or phenomenon. A human figure might also be carved at the top of a heraldic pole.
- An oval design (an eye or a face) represents the joints of the body and symbolizes spirit and power. Used on wings, they indicate the power of flight; in the ear, they represent hearing or understanding; and in the eye, they indicate the vital force of life. At other times, figures of feathers, bird tails, fins or other designs are used simply for decoration and do not carry any legendary references or symbolic significance.

## *Where To See Totem Poles*

- **Sitka**

Sitka National Historical Park, National Park Service (includes a Visitor Center where you can watch carvers work and learn about the history of Sitka and Native culture)

- **Ketchikan**

Totem Bight State Park, ten miles north of Ketchikan, overlooking Tongass Narrows (includes large collection of totem poles and a traditional plank house)

Saxman Totem Park

Tongass Historical Society Museum

Totem Heritage Center

Throughout downtown

- **Wrangell**

Kiks'adi Totem Park (on Front Street)

Chief Shakes Island

Throughout town

- **Port Chilkoot, Haines and Klukwan**

*The tallest totem pole in Alaska is located in the village of Kake on Kupreanof Island and stands 132 feet, six inches. The pole was carved in the 1970s at the Indian Arts Center at Port Chilkoot.*

- **Klawock, on Prince of Wales Island**

Totem Park on Prince of Wales Island (includes excellent examples of mortuary and memorial poles)

- **New Kasaan, on Prince of Wales Island**

Totems were brought over from Old Kasaan.

- **Juneau**

The State Museum, outside the Memorial Library, Centennial Hall, the Auke Village site, the Auke Tribe Building and throughout the area.

Information for this publication was gathered from Looking at Totem Poles, by Hilary Stewart, University of Washington Press, Seattle, WA 1993; Monuments in Cedar, Edward L. Keithahn, Bonanza Books, New York 1963; and Alaska's Southeast: Touring the Inside Passage by Sarah Eppenbach, The Globe Pequot Press, Chester, Connecticut, 1991 and Art of the Totem, Marius Barbeau, Hancock House, Surrey, B.C., 1992.

Information was reviewed by Gerry Clark, Regional Group Leader, Herritage Program, U.S. Forest Service, John Foss, Native Liaison, U.S. Forest Service, and Andy Hope, Bureau of Indian Affairs.

# ADVENTURES THROUGH THE WRANGELL NARROWS

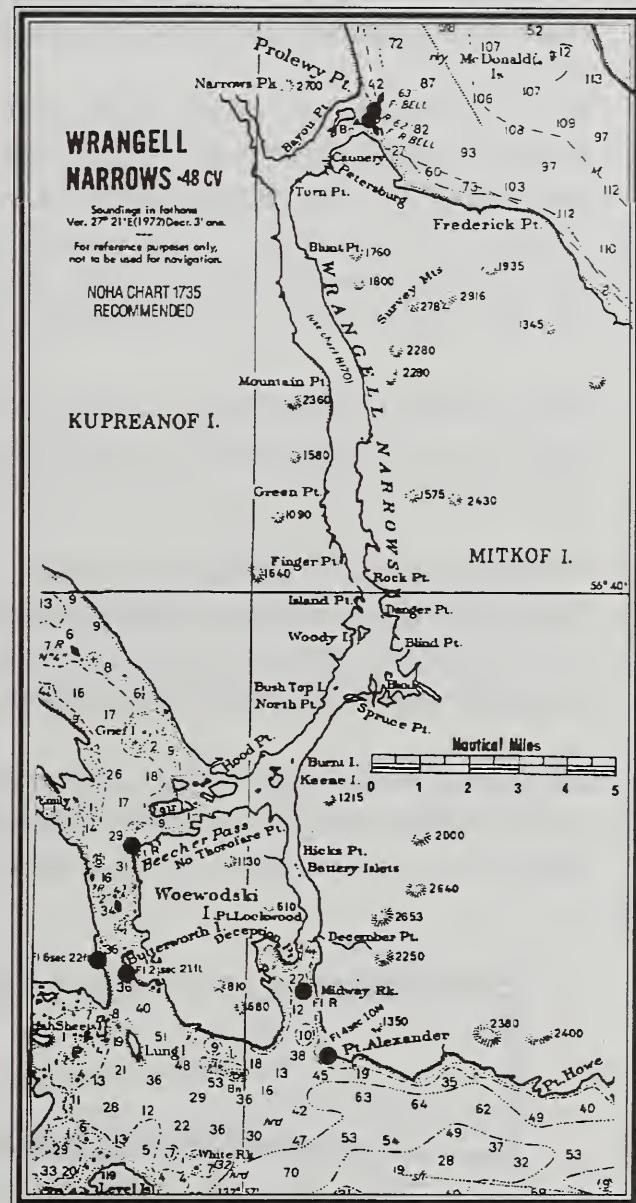
The Wrangell Narrows is a virtual slalom course for ships. Because of constricted areas and the snake-like path the narrows takes, a total of 46 separate course corrections are made requiring the use of navigational aides. Most of these aids to navigation contain lights which make night viewing of the narrows a spectacular sight.

Most of the Alaska State Ferries travel through the Wrangell Narrows during the night on their northbound legs. Approximately one and a half hours after leaving the port of Wrangell, the ship will make a right turn at Point Alexander (watch for the lighted aid). This point marks the entrance to the Wrangell Narrows which runs for 21 miles to its northern terminus--the fishing community of Petersburg.

As we transit the Wrangell Narrows the ship's Captain is on the bridge and in command. Also on the bridge are the mate on watch, the helmsman, and a lookout. From the foreward observation lounge, the bow lookout can be seen. This second lookout is posted in narrow areas to watch and listen for other vessels, hazards in the water and aids to navigation. The bow lookout is also responsible for the anchors. In the event of an emergency, he would drop the anchors holding the ship on station and preventing a worsening of the situation.

The lights in portions of areas aboard the ship below the bridge are dimmed at dusk by the watchman. This is done to prevent glare from any lights diminishing the night vision of crew operating from the bridge.

The Wrangell Narrows averages a half mile in width from shore to shore. In some sections, the channel which can be used by ships the size of the ferries is less than a football field (300 ft) wide. Between 1946 and 1948, the Army Corps of Engineers carried out a dredging project in the Wrangell Narrows providing the channel with an average depth of 26 feet at zero tide (Mean Low Low Water - MLLW). Since 1948, the channel has silted-in to an average depth of 22 feet; and in some sections, the channel is only 19 feet deep. A look at the nautical charts will show that the main channel is monitored and dredged on a continuing basis.



The ferries draw an average of 16 feet but require an additional 5 feet under the keel to maintain steerage. This means there must be at least 21 feet of water in the channel for the ships to operate safely. To ensure adequate water in the channel, we transit the narrows only when the tide is plus two feet or better, meaning the tide is at least two feet above MLLW.

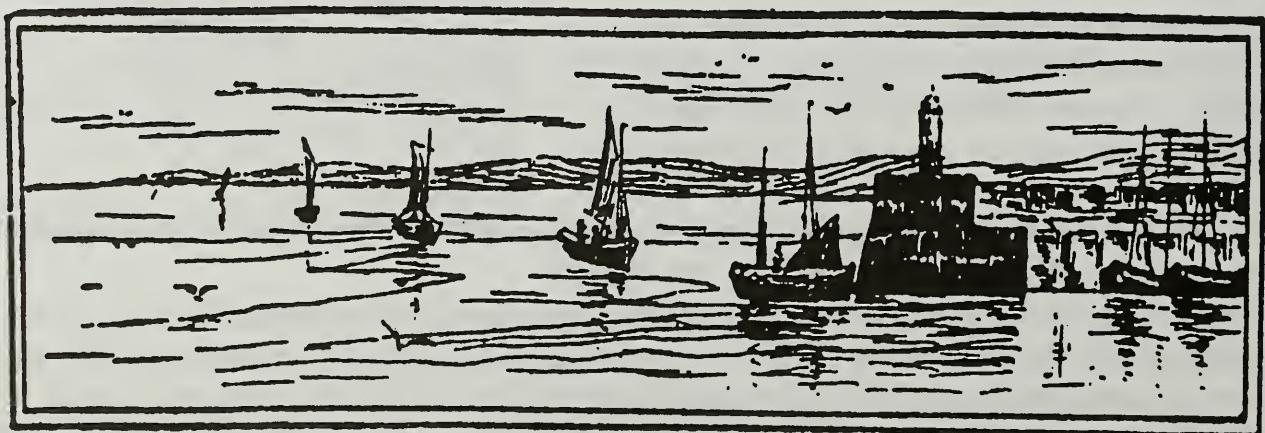
Of course, the ship's schedule is determined by the tide. Not only must the ferries have a "plus two" tide, but they cannot go through the Wrangell Narrows at the same time as another large vessel. Thus, most of the narrows is one-way for ship traffic of these dimensions.

The U.S. Coast Guard maintains the system of aids to navigation throughout the Wrangell Narrows. By their shape, color, number, light or sound characteristics these aids tell the navigator how to safely transit the waterway. Buoys are used in conjunction with charts to determine the ship's position and during the night, seamen or mates watch the radar as well. Even though the radar and other modern navigational devices are very useful to the mariner, experience or having navigated these waters time and time again is the most important factor in navigating through the Wrangell Narrows.

Range markers (white lights) are two structures which, when appearing in line, one over the other, indicate to the mariner that the correct course is being steered. These can be distinctly seen at night and can be thought of as being used like gun sights by the navigator.

Navigational aids are powered by battery packs containing four batteries each about the size of the battery in your car. The lights are turned on and off by light-activated sensors. There is also a series of six bulbs on a ferris wheel arrangement and should one burn out, the next one would rotate into place. The lights are annually serviced by the Coast Guard buoy tenders.

During the daytime, the Wrangell Narrows abounds with eagles and provides a close-up view of our national forest. However, viewing the blinking, beckoning lights while weaving through the darkened waterway is an experience unsurpassed--a Southeast Alaska light show!!!



Wrangell Narrows chart: Marine Atlas, Volume 2. Port Hardy to Skagway  
Bayless Enterprises, INC 1959, 1971, 1992

---

## MOST FREQUENTLY ASKED QUESTIONS

**Q. Will I see an aurora?**

A. Auroras are visible throughout the Northern Hemisphere on many clear nights during the winter months. For unknown reasons, the "best" chance of sighting auroral lights seems to be during the Fall and Spring months. As auroral activity is related to sun spots; auroras also run on an 11 year cycle. 1989 was a record aurora year - so, as we head toward the turn of the century (11 years later) increased aurora activity will usher in the new millenium.

**Q. When will we get to \_\_\_\_\_?**

A. The accompanying chart shows travel times between destinations along the Inside Passage. If you know when you left one, you'll be able to determine when you'll arrive at the other.

|                                 |              |
|---------------------------------|--------------|
| BELLINGHAM TO KETCHIKAN.....    | 37 hrs.      |
| PRINCE RUPERT TO KETCHIKAN..... | 6 hrs        |
| KETCHIKAN TO WRANGELL.....      | 6 hrs        |
| WRANGELL TO PETERSBURG.....     | 3 hrs        |
| PETERSBURG TO JUNEAU.....       | .8 hrs       |
| JUNEAU/AUKE BAY TO HAINES.....  | 4 hrs 30 min |
| HAINES TO SKAGWAY.....          | 1 hr         |
| JUNEAU TO SITKA .....           | 8 hrs 45 min |
| SITKA TO PETERSBURG .....       | 10 hrs       |

\*\* NOTE: It's always a good idea to check at the Purser's desk, as the ferry schedule is subject to change without notice.

**Q. How come Southeast Alaska isn't part of Canada? And what's with that wiggly border anyway?**

A. While some Alaskans might respond with, "Why doesn't the border run straight north from Hyder instead?", there is an explanation. The original border was established in 1825 as part of a treaty between the Russian America Company and the British Hudson's Bay Company. That treaty established a line following the ridgeline of the coast range of mountains and was never to be farther inland than 10 leagues. Sounds easy enough doesn't it? The difficulty came from determining where "inland" started - the mouths of bays or the heads. Canada opted for the mouths, while the U.S. went for the heads. Ultimately, in 1903, an international tribunal sided with the United States and the border we share today was established. If the Canadians had prevailed, Skagway, Dyea, and Haines would now be in Canada.

**Q. Do they speak Russian in Sitka?**

A. At its largest, the population of Russians in the Russian America Company was probably no more than 800-1000 spread throughout Alaska. So, no English is the dominant language in Sitka. While the Russian language is disused, Russian Orthodoxy and the Russian Orthodox Church is still active throughout what was Russian America.



**Q. So, where are all those glaciers I've been hearing about?**

A. Although Alaska has more than 100,000 glaciers (half of all the glaciers in North America), the first one visible along the ferry route (northbound) is the Mendenhall Glacier (a valley glacier) visible from Auke Bay/Juneau. Other valley glaciers seen along Lynn Canal are the Herbert and Eagle Glaciers just north of Juneau, the Davidson, Rainbow and Ferebee Glaciers just south of Haines. Icebergs from the Sawyer and LeConte Glaciers (tidewater glaciers) can be seen along the ferry route.

**Q. What is the Permanent Fund?**

A. The Alaska Permanent Fund is a savings account, restricted in use, which belongs to all the people of Alaska. Created in 1976, by an amendment to the State Constitution. The fund receives 25% of state received revenues from the extraction of all non-renewable resources (with an intention of making nonrenewable resources renewable). Dividends are distributed each year to all Alaskans who apply and qualify. The amount of the dividend is decided by a formula which takes into account inflation and earnings. Every qualified Alaskan received a check for more than \$1100 in 1996.

**Q. Will I see whales, eagles, dolphins, bears, etc.?**

A. While most of the humpback whales go south for the winter (Mexico and Hawaii), some do winter over here in Southeast and some, delay their departure until Jan/Feb, then depart south. Eagles are most plentiful in the Haines area thru Nov/Jan though visible throughout the Tongass. Best wildlife viewing seems to be those places where the ship approaches the shore - Peril Straits, Wrangell Narrows, and the Lynn Canal. Keep your eyes open, they're out there.

**Q. How much does it rain (snow/blow/freeze) here?**

A. Rainiest: 24 hours - Angoon (Oct. 12, 1982) 15.2 inches

Snowiest: Thompson Pass (north of Valdez) - Season 974.5 inches; month 298 inches;  
24 hours 62 inches.

Highest temperature - Ft Yukon 100 degrees

Coldest Temperature - Prospect Creek minus 80 degrees

Windiest - Shemya Island in the Aleutians more than 139 mph

Alaska and Hawaii hold the record for the lowest high temperatures in the U.S. Both have 100 degree highs. Every other state has highest temperatures over 100. California with 138 degrees has the highest high. The state with the next lowest low temperature is Montana with a minus 70 degrees.

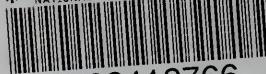


NATIONAL AGRICULTURAL LIBRARY



1022412766

\* NATIONAL AGRICULTURAL LIBRARY



1022412766

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, and marital or familial status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means of communication of program information (braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-2791.

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, DC 20250, or call 1-800-245-6340 (voice) or (202)720-1127 (TDD). USDA is an equal employment opportunity employer.



Federal Recycling Program  
Printed on Recycled Paper